COLUC

Central Ontario Lakeshore Urban Complex

policy tests using empiric growth allocation model 1986 & 2001

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PEAT MARWICK AND PARTNERS

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September 13, 1974

Mr. Nigel H. Richardson
Chief Planner
Ministry of Treasury, Economics and
Intergovernmental Affairs
Regional Planning Board
Central Ontario Region
5th Floor, Frost Building North
Queen's Park
Toronto, Ontario

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Dear Mr. Richardson:

Policy Tests Using the
Empiric Growth Allocation Model

We are pleased to submit to you our final report on the policy tests done by our firm using the Empiric Growth Allocation Model (EGAM), on behalf of the COLUC Task Force.

The Model was made available to the Task Force by the Toronto Area Airport Project, and Peat, Mariwck and Partners staff on assignment to the Airport Project were responsible for running the model. In addition, PM&P was responsible for quantifying the policy input data on the basis of information supplied by the Task Force, and for evaluating the output.

This report presents a summary of the methodology used to develop the input data, a listing of the 27 runs performed, a comparison of the results and their policy implications, and the detailed population and employment forecasts by urban place and subregion for each of the policy cases examined.

The major conclusions of the analysis are presented on pp 12-20 of the Report, together with four sets of figures which compare the various policy alternatives in graphical forms.

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Mr. Nigel H. Richardson September 13, 1974

In summary, these major conclusions are:

1. The provision of serviced land has a very high short-term impact on the distribution of population in the Region.

2. Transportation improvements do not appear to have as significant a short-term impact.

3. The short-term variations in the employment forecasts are markedly less noticeable than in the population forecasts.

4. Policies designed to constrain the growth in service employment in downtown Toronto would appear to be necessary to direct growth to some other parts of the Region.

5. The longer term (2001) impacts of the various policies are similar to their short-term impacts except that transportation improvements appear to have more effect in the long run.

6. All of this leads us to conclude that transportation alone cannot be the sole instrument to encourage decentralization.

7. Finally, it appears that the new Pickering Airport is a very important instrument in encouraging growth to the east.

We are delighted to have had the opportunity to assist the COLUC Task Force in this most important assignment.

Yours truly,

PEAT, MARWICK AND PARTNERS

NAI/jr

Neal A. Irwin,
Partner.

PEAT MARWICK AND PARTNERS

COLUC TASK FORCE

POLICY TESTS USING EMPIRIC GROWTH ALLOCATION MODEL

FINAL REPORT

PEAT, MARWICK AND PARTNERS

AUGUST, 1974

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C DETAILED DEFINITION OF THE 1986 TRANSPORTATION CASES

D YEAR 2001 CASES

COLUC TASK FORCE
EMPIRIC FORECAST RUNS

INTRODUCTION

This report presents the forecasts produced by use of the Empiric Growth Allocation Model (EGAM) for the COLUC Task Force. The EGAM Model was run by the Toronto Area Airports Project on behalf of the Task Force. The input data was developed by staff from Peat, Marwick and Partners on the basis of the information provided by the Task Force and with advice and guidance from Airports Project staff.

This report is divided in four main sections. The first one presents a brief summary of the methodologies used to develop the input data. The second section lists all the runs made with a brief definition of their characteristics. The third section is a discussion of the similarity and differences between the various forecasts and their policy implications. The fourth section is a summary presentation of the forecasts for each of the cases presented.

EXHIBIT 1

THE EMPIRIC GROWTH ALLOCATION MODEL

I. Change in Share of Population =

SIGN	COEFFICIENT	VARIABLE	LEVEL OF SIGNIFICANCE
+	.1348	Change in Share of Retail, Service & Other ("RSO") Employment	99%
+	.1013	Share of Water Capacity at Time t_o	99%
+	.2659	Change in Share of Pollution Control Capacity	99%
+	.5124	Change in Share of Residential Acres	99%
-	.1306	Share of Transit Access to Population at time $t_o / \beta = .15$	99%
+	.0258	Share of Road Access to Retail, Service & Other Employment at time $t_o / \beta = .15$	99%

$R^2 = .9100$ Standard Error = .0015

II. Change in Share of Manufacturing & Wholesale Employment =

+	.3661	Change in Share of Population	91%
+	.5281	Share of Retail, Service & Other Employment at time t_o	99%
-	.6112	Share of Water Capacity at Time t_o	99%
+	.3409	Change in Share of Transit Access to Downtown / $\beta = .05$	99%
+	.3879	Share of Road Access to Manufacturing & Wholesale Employment at Time $t_o / \beta = .15$	99%
-	.4660	Share of Road Access to Downtown at Time $t_o / \beta = .20$	99%
+	.1945	Share of Transit Access to Downtown at Time $t_o / \beta = .05$	97%

$R^2 = .7581$ Standard Error = .0051

III. Change in Share of Retail Service & Other Employment =

-	.2114	Change in Share of M & W Employment	97%
+	.1098	Share of Airport Access at Time (t+1) / $\beta = .05$	99%
-	.2442	Share of Population Density at Time (t_o)	99%
+	.3660	Share of Road Access to Downtown at Time (t_o) / $\beta = .15$	99%
+	.3028	Share of Transit Access to Population at $t_o / \beta = .15$	99%
-	.5217	Share of Transit Access to RSO Employment at Time / $\beta = .15$	99%

$R^2 = .8488$ Standard Error = .0035

POLICY INPUTS

The EGAM Model is a simultaneous equation regression model which forecasts Population, Manufacturing and Wholesale (M and W) employment and Retail, Service and Other (RSO) employment for 5 or 6 year periods. The three equations of the Model are shown on Exhibit 1, opposite.*

As can be seen from the equations, the policy inputs required on a zone by zone basis to run the model are:

- residential acres
- servicing (i.e. water and pollution control) capacities
- accessibilities (by road and transit)
- airport roles.

In addition, as the Model forecasts the allocation of shares of growth to zones in a region but does not forecast absolute growth of activities, regional control totals for population and employment are required for each forecast year and must be calculated externally.

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* For a detailed description of the model, see: Irwin, N.A., Gwilliam, R. and Ostrom, A.R., Understanding the Urban Process: The Empiric Growth Allocation Model, paper presented to the National Conference of the Canadian Operational Research Society, May, 1973.

Newmarket

Aurora

AUDLEY

COLUMBUS

Richmond Hill

Markham

Woodbridge

NORTH PICKERING

BRAMPTON-BRAMALEA

NORTH METRO FRINGE

MALTON

METROPOLITAN TORONTO

PICKERING

AJAX

OSHAWA-WHITBY

Bowmanville

NORTH OAKVILLE

ERIN MILLS-MEADOWVALE

MILTON

MISSISSAUGA

NORTH BURLINGTON

OAKVILLE

BURLINGTON

HAMILTON

1 2 3 4 5 6 Miles

Exhibit 2

PRINCIPAL URBAN PLACES WITHIN THE COLUC STUDY AREA

Forecasts were made for the COLUC Task Force for the years 1986 and 2001. The Model being calibrated for a five-year (1964-1969) period is most efficient at making forecasts for time intervals of approximately five years and thus, intermediate forecasts for the years 1975 and 1981 are required to obtain the 1986 forecasts and 1991 and 1996 forecasts are required to continue the forecasts to the year 2001. Input data must therefore be generated for the intermediate years as well as for the target years. The methods used to develop the input data are explained below.

Residential Acres

For all the 1986 runs, except the two runs labelled "Trend Cases" for which explanations are provided below, the same method has been used with varying assumptions. The method has consisted in (1) taking the 1986 population preference figures by urban place as supplied by the Task Force (the urban places are shown on Exhibit 2, opposite) (2) using the actual 1971 figures and the 1986 preference figures to derive figures for 1975 and 1981 by interpolation; (3) assuming residential densities for new developments in each of the three time periods, 1969-75, 1975-81 and 1981-86; (4) dividing the assumed population increases by the assumed densities to obtain the increases in residential acres for each of the time periods. The residential acres obtained in

this fashion thus reflect a policy of trying to attain the preferred levels of population for each urban place in 1986.

The two "Trend Cases" correspond to cases developed by the Toronto Area Airports Project in their study of the Pickering Airport's economic impact. These runs were made prior to the establishment of the COLUC Task Force and were therefore based on the interpretation of what was then current policy. In particular, only the TCR 2000 target population figures were available at that time. The 1975, 1981 and 1986 population figures were thus derived by interpolation between 1971 and 2000. The acres were then derived in a manner similar as the one described above, taking into account planned development wherever such information was available.

In all cases, the increases in residential acres were added to the 1969 acres to obtain the total residential acres available in each one of the forecast years.*

For the 2001 runs the same method as for the non-trend 1986 runs was used except that the 1991 and 1996 population figures were derived by interpolation from the 1986 and 2001 preference levels.

---

* In certain zones where extensive low density residential development has been taking place, this has led to a fairly substantial underestimate of the actual growth in residential acres. In view of the need to complete the runs within a limited time period, and the fact that data related to actual developed residential acres was not readily available, it was decided to accept the estimates as derived above.

In all cases, the total residential acres were checked against the availability of land so as not to exceed the development capacity for each urban place.

Servicing Infrastructure

For all of the servicing alternatives, it was assumed that the additional capacity which would be required (both water and sewers) was a direct function of the planned (or preferred) increases in population. For all urban places, it was thus assumed that both water and sewer requirements were 200 gallons per capita per day for any increase in population. The increments developed in this fashion were added to the 1969 levels to obtain the total water and sewer capacities in each forecast year.

Transportation Infrastructure

The Empiric program library includes a module to calculate the various accessibilities required as inputs for the Model, given interzonal travel times. To calculate these travel times, a road network and a transit network were constructed. Each network is made up of a series of links representing vehicle routes, bus routes, subway lines and train lines, and has upwards of 500 nodes. This simplified network is capable of reproducing the TARMS travel times with margins of error of less than 10 per cent in most cases.

These networks were then expanded to include all the planned road and transit improvements to 1986 appropriately phased. These expanded networks were then used as "base networks" to which further improvements were added as policy alternatives. The two "Trend Cases" used networks essentially similar to these base networks. For the 2001 runs the "maximum" 1986 networks (i.e. base networks with all improvements) was used for all forecast years beyond 1986. Travel times derived in this manner for each forecast year were used to calculate the accessibilities required by the Model. These accessibilities are formulated as weighted or unweighted sums of negative exponent functions of travel times, with the appropriate value of β, the decay parameter.

Airport Roles

All runs, except three, include the new Pickering Airport, which is assumed to be operational by 1981. Three 1986 runs were made with no new Airport: a "Base Case with no new Airport"; a "Trend Case with no new Airport"; and, a "Mature State Densitites Case with no new Airport".

Airport development for Pickering has been assumed in accordance with the present federal estimate of the most likely roles for Pickering and Malton, i.e. a limited international role in 1981, a full international role (excluding U.S.) in 1986 and a full long-haul (i.e. domestic

and U.S. long-haul and international) role in 2001, with Malton Airport keeping those traffic sectors not assigned to Pickering.

Regional Control Totals

Regional Control Totals for Population and Employment for 1986 and 2001 were supplied by the Task Force. They correspond to present preferred levels for those years. The control totals for the intermediate years were derived by interpolation.

BRIEF DEFINITION OF COLUC FORECASTS

Twenty-seven forecasts grouped in six categories were developed. They are listed below and presented in more detail in appendices A, B, C, and D to this report.

Base Case 1986 (1)

One case based on the 1986 base road and transit networks, assumptions for residential acres and servicing infrastructure that are uniformly consistent with the mature-state role of each urban place and densities increasing over time. This case is described in detail in Appendix A to this report.

Cases derived from the Base Case (4)

Four cases, as follows (see Appendix B for more detailed descriptions):

No New Airport: same as Base Case, but without Pickering Airport.

Mature State Densities with New Airport: same as Base Case, but with mature-state densities assumed for residential development starting immediately.

Mature State Densities without New Airport: same as above, but without Pickering Airport.

CBD Restricted: same as Base Case, but with some constraint on employment growth in downtown Toronto and Malton and the addition of 10,000 jobs in Oshawa by 1986.

Trend Cases (2)

Two cases (developed by the Toronto Area Airports Project prior to the COLUC exercise), as follows (see Appendix B for more detailed descriptions):

Trend Case with New Airport: Road and Transit Networks similar to Base Case. Residential acres and servicing capacities derived from an analysis of trends and policies current prior to the establishment of the COLUC Task Force.

Trend Case without New Airport: same as above, but without Pickering Airport.

Note that because these two cases are based on policy assumptions that differ from those made in the other 1986 cases, the Regional Control totals are not the same as those used in all the other cases.

Servicing Cases (4)

Four cases, as follows:

York Pipe: same as Base Case, but with water and sewer capacities in the urban places of the Central York Servicing Scheme increased to meet the preferences of 2001 by 1986. (See Appendix B.)

Oshawa-Whitby Pipe: Defined in the same way as the above, but in relation to the urban places served by the Oshawa-Whitby servicing system. (See Appendix B.)

Peel Pipe: defined in the same way as the above but in relation to the urban places of the South Peel System. (See Appendix B.)

All Pipes: includes all servicing improvements of the above three cases. (See Appendix B.)

Transportation Cases (11)

Eleven cases, as follows (note that the exact definition of the additional transportation facilities is provided in Appendix C to the report):

Transportation Case 1 (T.C.1): same as Base Case, but with GO service extended to Oshawa.

T.C.2: same as T.C.1, with the addition of an Airport Feeder Triangle Service.

T.C.3: same as T.C.2, with the addition of an Airport High Speed Triangle Service.

T.C.4A: same as T.C.3, with the addition of Hamilton-Oshawa Lakeshore High Speed Ground Transit.

T.C.4B: same as T.C.3, with the addition of Union Station-Oshawa Lakeshore High Speed Ground Transit (described in next section).

T.C.5: same as T.C.4A, with the addition of Inter-connecting Airport High Speed Ground Transit Service to Oshawa and Hamilton (described in next section).

T.C.6: same as T.C.5, with the addition of a Regional Feeder Commuter Service (described in next section). This is the maximum transit system and it is referred to as the "Super System".

T.C.7: same as Base Case, with the addition of the Scarborough Expressway. This is the only run which includes a road improvement over the Base Case.

T.C.8: same as T.C.4B, with the addition of increased congestion on the road system and improvement in access time to rapid transit in the Oshawa-Whitby area.

T.C.9: same as Base Case, with improvement in access time to rapid transit across the region.

T.C.8 with Oshawa-Whitby Pipe: Combination of T.C.8 with the servicing assumption of the Oshawa-Whitby Pipe case.

Year 2001 Cases (5)

Five cases, as follows (the cases are described in more detail in Appendix D):

Base Case 2001: An extension of the 1986 base case to the year 2001. The 1986 transportation level of service is maintained to the year 2001 for both the road and transit systems.

Revised Base 2001: same as the Base Case 2001, with a lowering of the access time to the rapid transit system in eight locations, i.e. Hamilton, Mississauga, Oshawa-Whitby, North-Pickering, Newmarket, Brampton-Bramalea, Finch-Bathurst and Downtown Toronto.

Revised Super System 2001: the super system (as defined in Transportation Case 6 of 1986) is assumed to be operational from 1986 onwards. In addition, the same assumption on access time to rapid transit is made as for the Revised Base 2001.

Road Congestion 2001: same case as Super System 2001 with an additional assumption of increasing road congestion on the road system. This assumption is translated in a 10% increase in all interzonal travel times every five years, starting in 1981.

Road Congestion - Oshawa-Whitby Pipe 2001: same as Road Congestion 2001, with increases in the servicing capacities in the Oshawa-Whitby area to meet the 2001 preferences by 1986 and the Mature State preferences by 2001.

Note on Case Definitions

All cases are extreme cases designed to over-emphasize particular policy options in order to clearly identify their impact on the Regional Development patterns.

COMPARISON OF FORECASTS

Some of the most significant conclusions are summarized below:

1. The provision of serviced land as represented by residential acres and corresponding water and sewer capacities has a very high short-term impact. The short-term nature of this impact is reflected by the fact that provision of extra residential land between 1975 and 1986 produced 1986 population forecasts higher by a factor of over 1.5 in the corresponding areas than under the base case. This increase is not paralleled in the employment forecasts which would seem to indicate that:

   (a) The pressure for residential land is so high that available serviced land is almost completely taken up by residential uses.

   (b) The growth in employment lags behind residential growth so that employment growth would appear to be a medium-term impact.

2. Transportation improvements do not appear to have a significant short-term impact as shown in the 1986 forecasts. This could be explained by the following factors:

   (a) The base case provides a high level of road access which is the same in all cases except for the one case that includes the Scarborough Expressway.

   (b) The transit improvements are very significant but are to be evaluated in light of the high level of road access provided throughout the region. Selective transit improvements would have a higher impact if not accompanied by uniform road improvements.

   (c) Such is the demand for residential land that transportation improvements would only be effective in combination with provision of serviced land.

agrees with Lowry

3. In all cases, the variations in employment are not high. The reasons appear to be

   (a) Employment is less mobile than population.

   (b) Employment follows short-term population increases.

   (c) So high is Metro Toronto's share of the regional employment that only a comparatively small amount is available for distribution in the rest of the region.

4. In light of point 3c, it would appear that policies designed to constrain employment growth in downtown Toronto are necessary to direct that growth to the eastern region. The case "CBD Restricted" was a test of such a policy and it did show that such policies might be effective but to a relatively minor degree. The 10,000 jobs exogenously assigned to Oshawa in the case might be government jobs and such other institutional jobs as university and hospital employment.

5. The 2001 forecasts indicate the following general conclusions:

   (a) The long term effect of improved transit service is clearly positive on all areas outside Metro, except Hamilton which does not seem to attract employment to match the population growth that it is forecast to receive.

   (b) Metro Toronto seems to profit most from increased congestion on the regional roads. This is likely explained by the very high level of transit service throughout Metro, whereas in the rest of the region, transit tends to serve specific nodes rather than large areas. The parallel effect is also likely to be an increased centralization around the transit nodes rather than a diffusion of employment opportunities inside the various urban places.

   (c) The high impact of the provision of serviced land is repeated in 2001 although its magnitude is not as high in relative terms as in 1986.

6. The general conclusions appear to be that:

   (a) Residential development is extremely sensitive to the provision of serviced land.

   (b) Transportation alone cannot be the sole instrument to encourage decentralization.

   (c) The New Pickering Airport is a very significant instrument in encouraging growth to the East.

   (d) Decentralization of employment from Metro Toronto will not occur unless, in addition to improved transportation and increases in the provision of serviced land, steps are taken to constrain downtown development and redevelopment.

Attached are figures showing a graphical comparison of the various cases. These summary figures are presented in four sets each consisting of a particular grouping of policy cases as follows:

Set 1 - 1986 Service Policy Alternatives:
- Base Case 1986
- Peel Pipe
- York Pipe
- Oshawa-Whitby Pipe
- All Pipes
- No New Airport

Set 2 - 1986 Transportation Policy Alternatives:
- Base Case 1986
- Transportation Cases 1 through 7

Set 3 - 1986 Other Service Policy Alternatives
- Base Case 1986
- CBD Restricted
- Trend Case with New Airport
- Mature State Density with New Airport

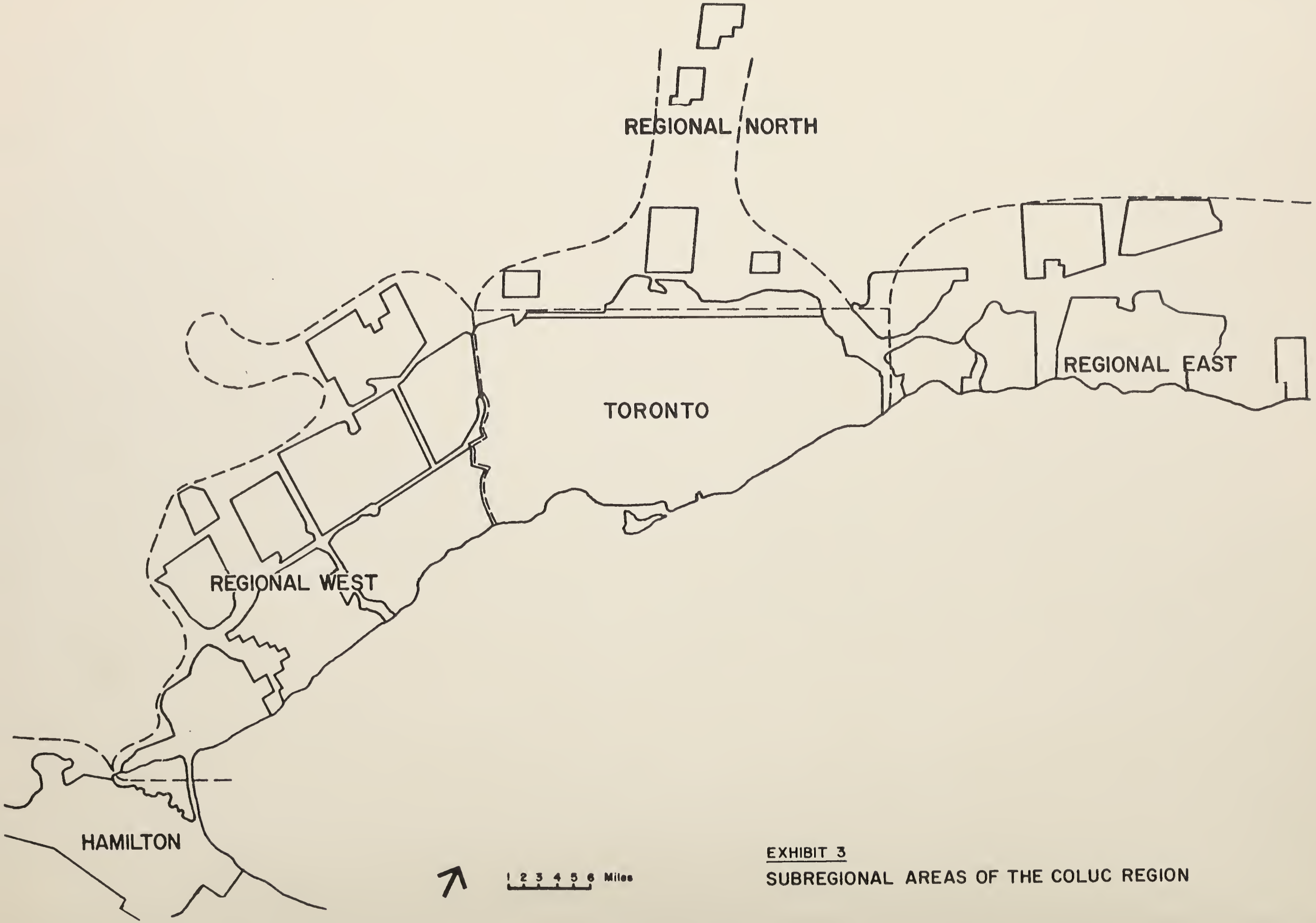


EXHIBIT 3

SUBREGIONAL AREAS OF THE COLUC REGION

Set 4 - 2001 Cases:
- Base Case 2001
- Revised Base 2001
- Revised Super System 2001
- Road Congestion 2001
- Road Congestion - Oshawa-Whitby Pipe 2001

In each of the figures, the population and employment forecasts are shown on bar diagrams for each of five sub-regions consisting of subregional aggregation of the COLUC Urban Place. The five subregions are shown on Exhibit 3, opposite, and are defined as follows:

METRO TORONTO

REGIONAL NORTH: North Metro Fringe, Richmond Hill, Woodbridge, Markham-Unionville, Aurora/Newmarket

REGIONAL WEST: Malton, Mississauga, Erin Mills/ Meadowvale, Oakville, North Oakville, Milton, Burlington, North Burlington, Brampton/Bramalea

HAMILTON

REGIONAL EAST: South Pickering/Ajax, North Pickering, Oshawa/Whitby, Bowmanville, Audley, Columbus

SUMMARY FIGURES: SET 1

1986 SERVICE POLICY ALTERNATIVES:

: BASE CASE 1986
: PEEL PIPE
: YORK PIPE
: OSHAWA-WHITBY PIPE
: ALL PIPES
: NO NEW AIRPORT

SHOWING FORECAST CHANGES (1971-1986) FOR

- POPULATION (Figure 1)
- MANUFACTURING & WHOLESALE EMPLOYMENT (Figure 2)
- RETAIL, SERVICE & OTHER EMPLOYMENT (Figure 3)
- TOTAL EMPLOYMENT (Figure 4)

ALSO, LABOUR FORCE VS. JOB OPPORTUNITIES (Figure 5)

NOTES:

Preferences: Three preferred levels are shown for 1986 population and two for 1986 total employment. They are indicated on the attached figures by horizontal lines and identified as:

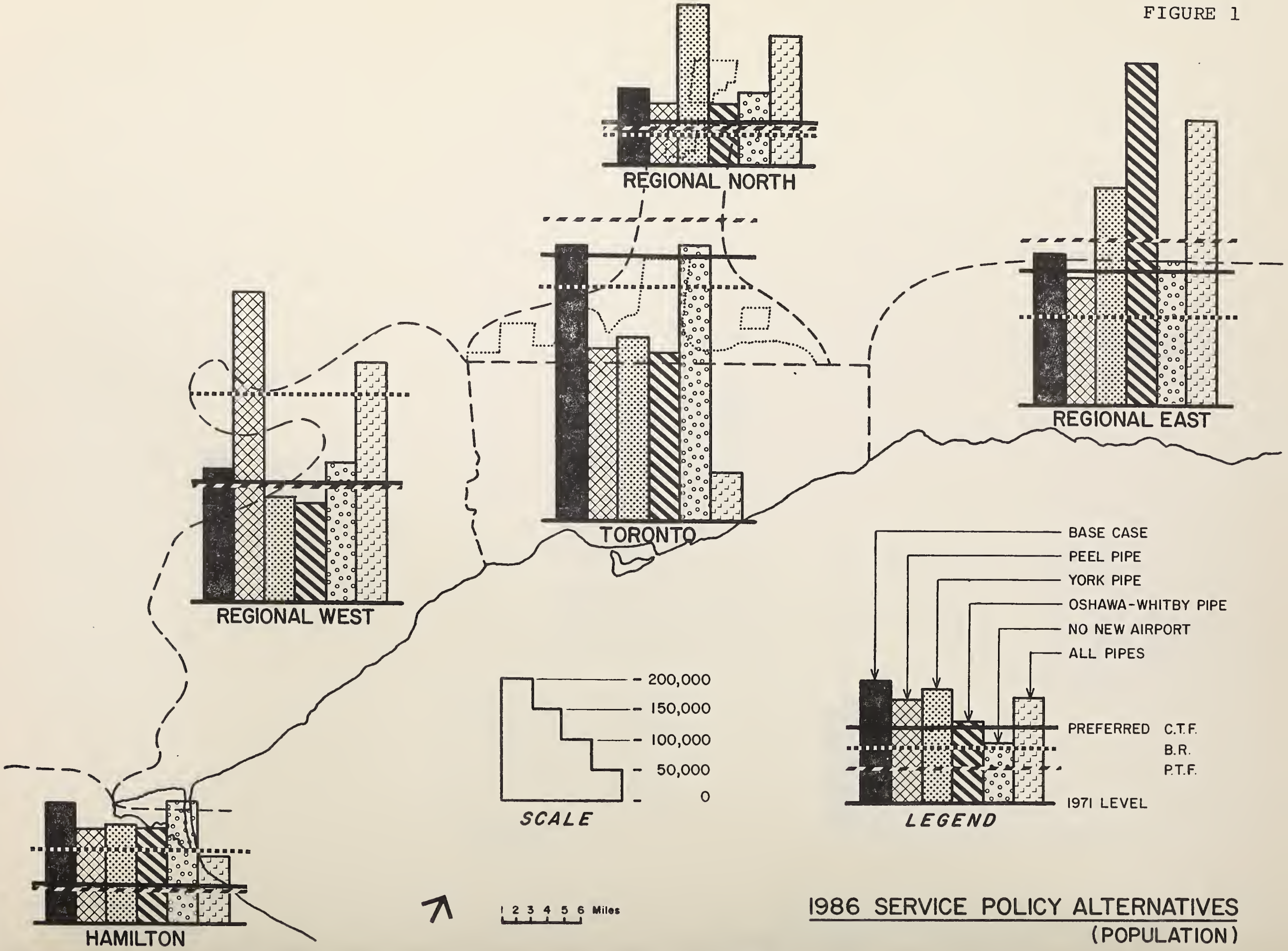
C.T.F. : Combined Task Force (The original population preferences for the COLUC Urban Places)

B.R. : Barrows/Robinson (The population and employment preferences identified in the Report by Peat, Marwick and Partners and Murray V. Jones and Associates to the COLUC Task Force.)

P.T.F. : Phasing Task Force (The population and employment preferences selected by the Phasing Task Force for the COLUC Area).

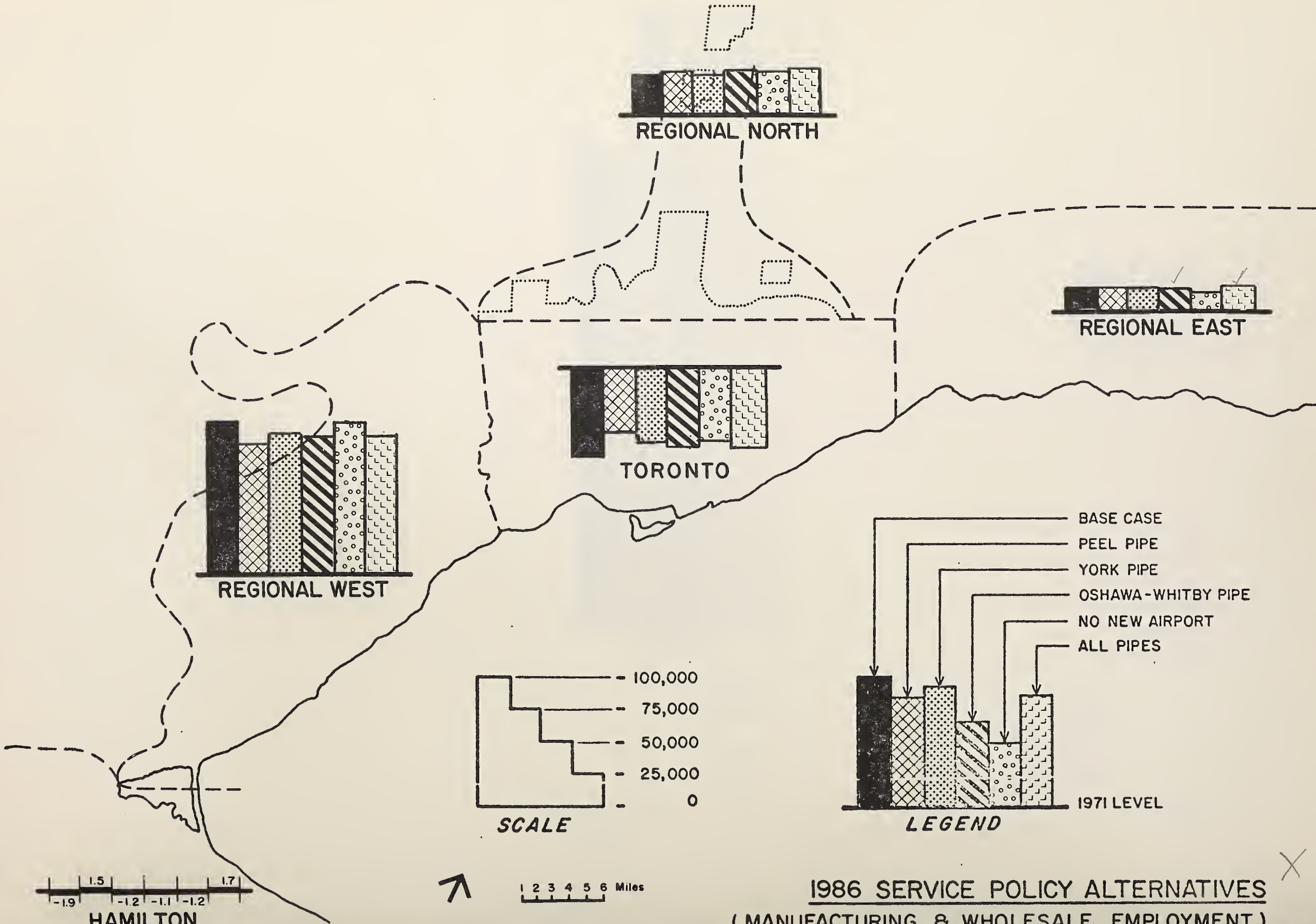
Labour Force vs. Job Opportunities: The Labour Force is calculated by multiplying the 1986 population forecast for each subregional area of the COLUC Region by the 1986 regional activity rate (i.e. regional employment divided by regional population). On the assumption that the regional activity rate applies, on the average, throughout the region, this converts the population forecasts into labour force forecasts. The labour force forecasts can then be compared to the forecast number of jobs to give an idea of the minimum amount of in-and out-commuting that will be required by 1986.

FIGURE 1



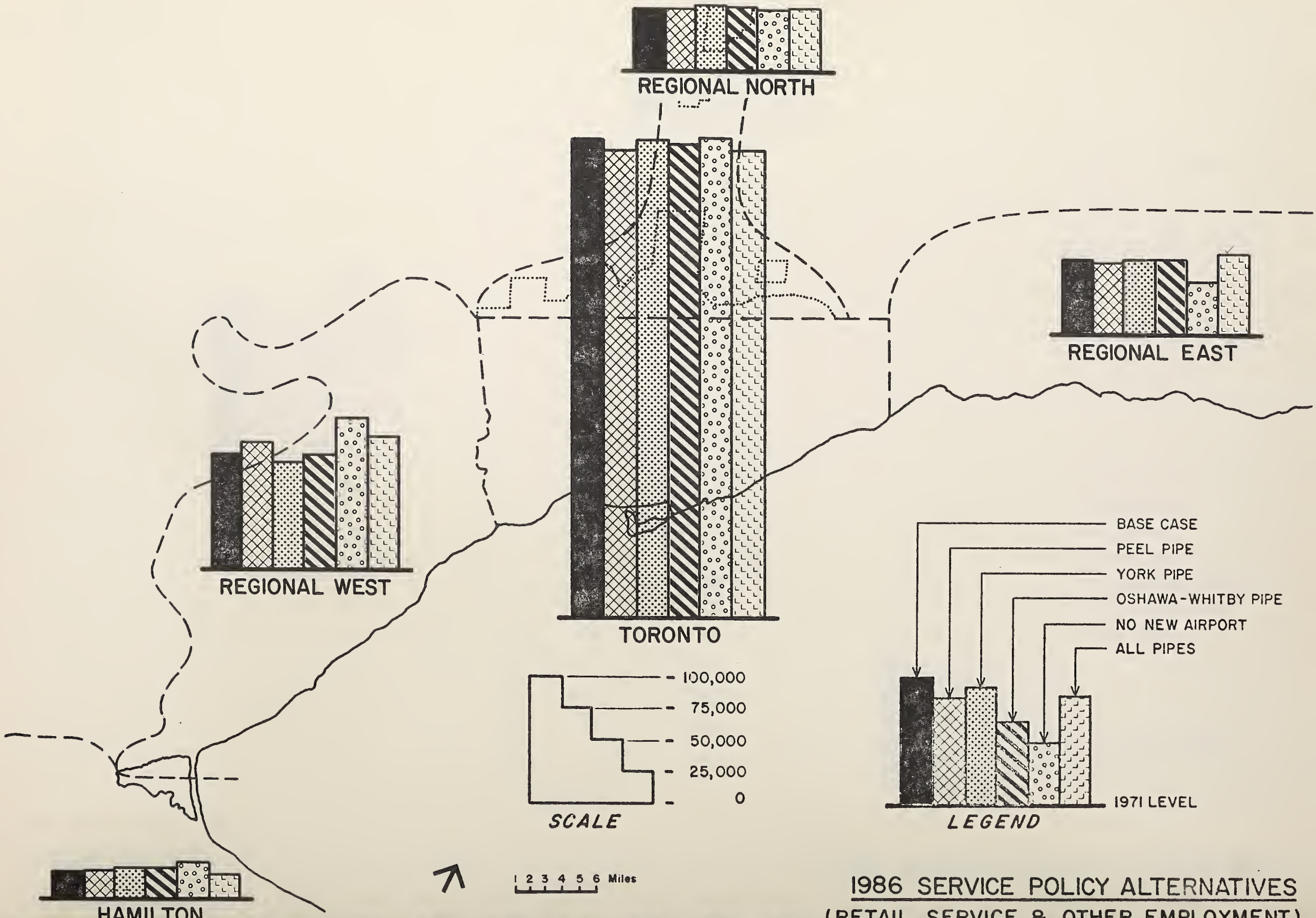
1986 SERVICE POLICY ALTERNATIVES
(POPULATION)

FIGURE 2

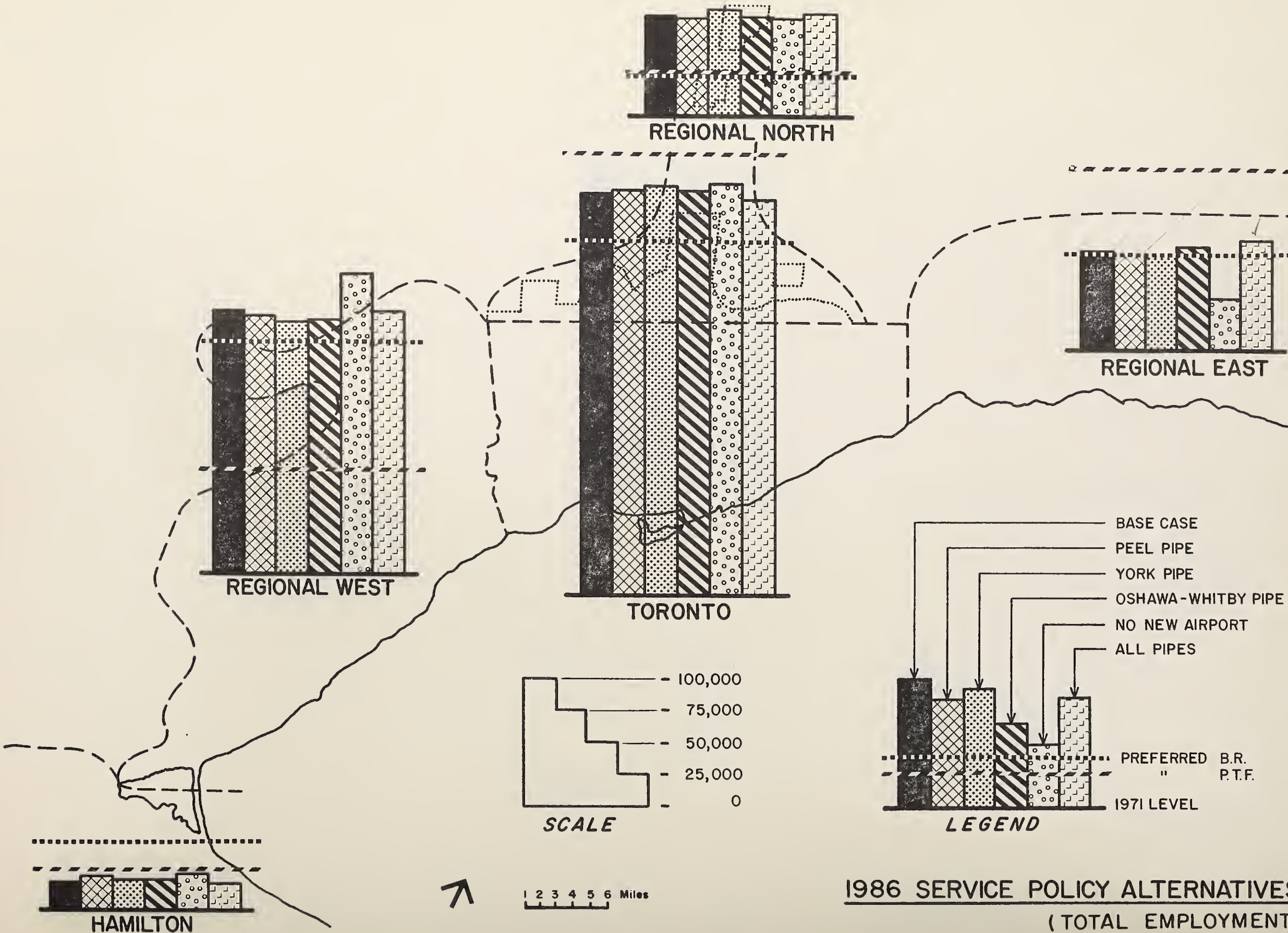


1986 SERVICE POLICY ALTERNATIVES

(MANUFACTURING & WHOLESALE EMPLOYMENT)

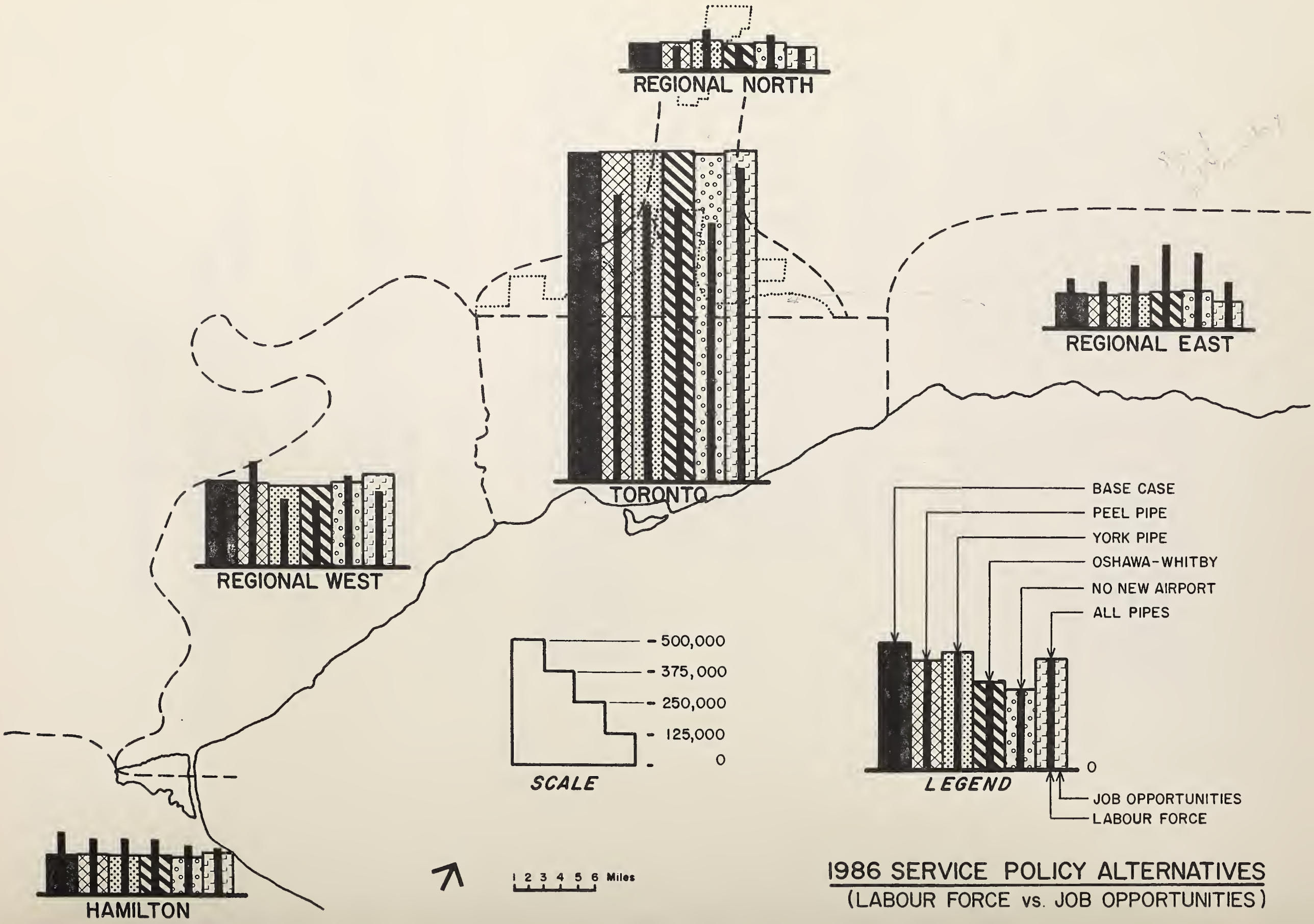


1986 SERVICE POLICY ALTERNATIVES
(RETAIL, SERVICE & OTHER EMPLOYMENT)



1986 SERVICE POLICY ALTERNATIVES

(TOTAL EMPLOYMENT)



1986 SERVICE POLICY ALTERNATIVES
(LABOUR FORCE vs. JOB OPPORTUNITIES)

SUMMARY FIGURES: SET 2

1986 TRANSPORTATION POLICY ALTERNATIVES:

: TRANSPORTATION CASES 1 THROUGH 7
AND BASE CASE 1986

SHOWING FORECAST CHANGES (1971-1986) FOR

- POPULATION (Figure 6)
- MANUFACTURING & WHOLESALE EMPLOYMENT (Figure 7)
- RETAIL, SERVICE & OTHER EMPLOYMENT (Figure 8)
- TOTAL EMPLOYMENT (Figure 9)

ALSO, LABOUR FORCE VS. JOB OPPORTUNITIES (Figure 10)

NOTES:

Preferences: Three preferred levels are shown for 1986 population and two for 1986 total employment. They are indicated on the attached figures by horizontal lines and identified as:

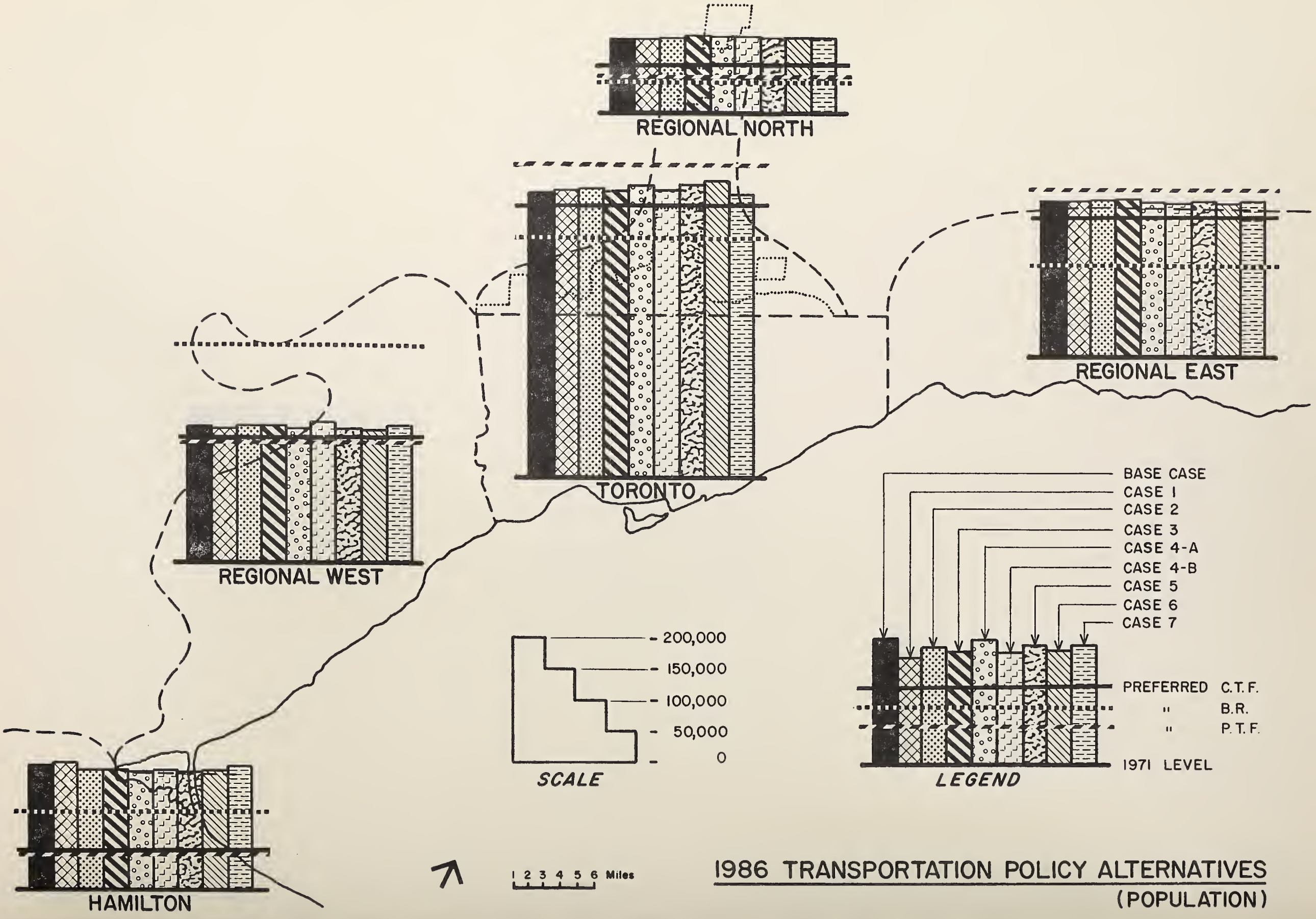
C.T.F. : Combined Task Force (The original population preferences for the COLUC Urban Places)

B.R. : Barrows/Robinson (The population and employment preferences identified in the Report by Peat, Marwick and Partners and Murray V. Jones and Associates to the COLUC Task Force)

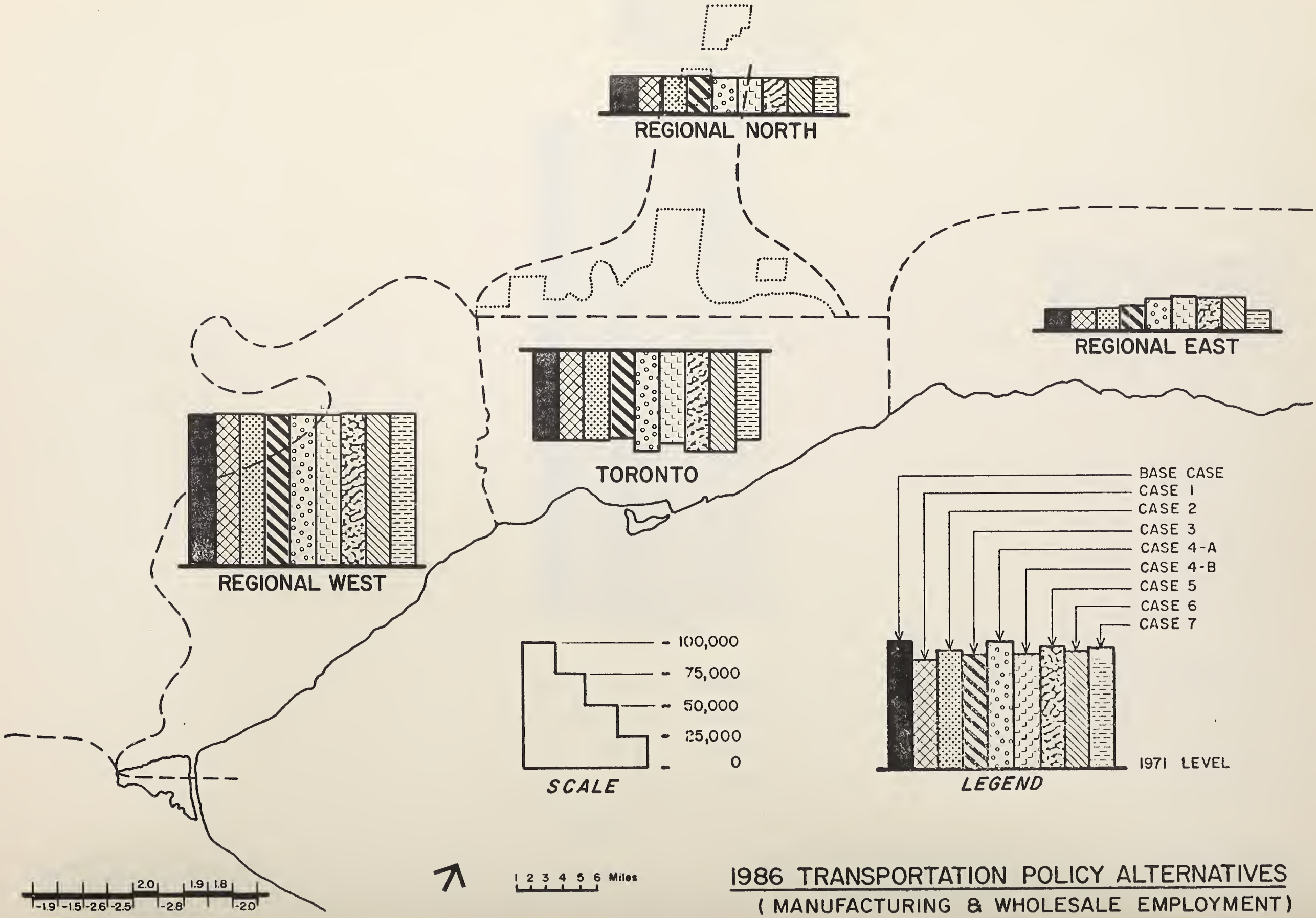
P.T.F. : Phasing Task Force (The population and employment preferences selected by the Phasing Task Force for the COLUC Area)

Labour Force vs. Job Opportunities: The Labour Force is calculated by multiplying the 1986 population forecast for each subregional area of the COLUC Region by the 1986 regional activity rate (i.e. regional employment divided by regional population). On the assumption that the regional activity rate applies, on the average, throughout the region, this converts the population forecasts into labour force forecasts. The labour force forecasts can then be compared to the forecast number of jobs to give an idea of the amount of in- and out-commuting that will be required by 1986.

FIGURE 6



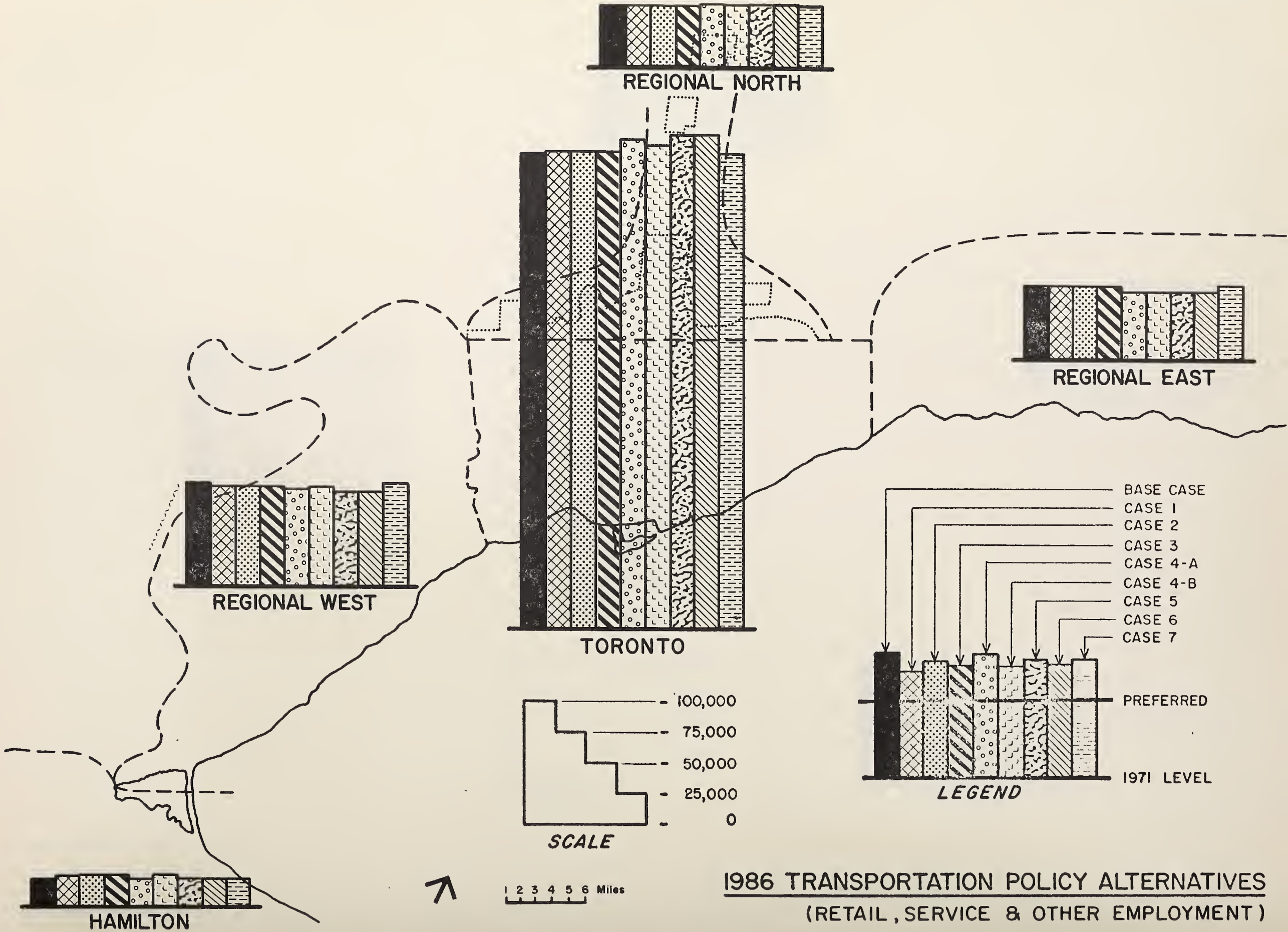
1986 TRANSPORTATION POLICY ALTERNATIVES
(POPULATION)



1986 TRANSPORTATION POLICY ALTERNATIVES

(MANUFACTURING & WHOLESALE EMPLOYMENT)

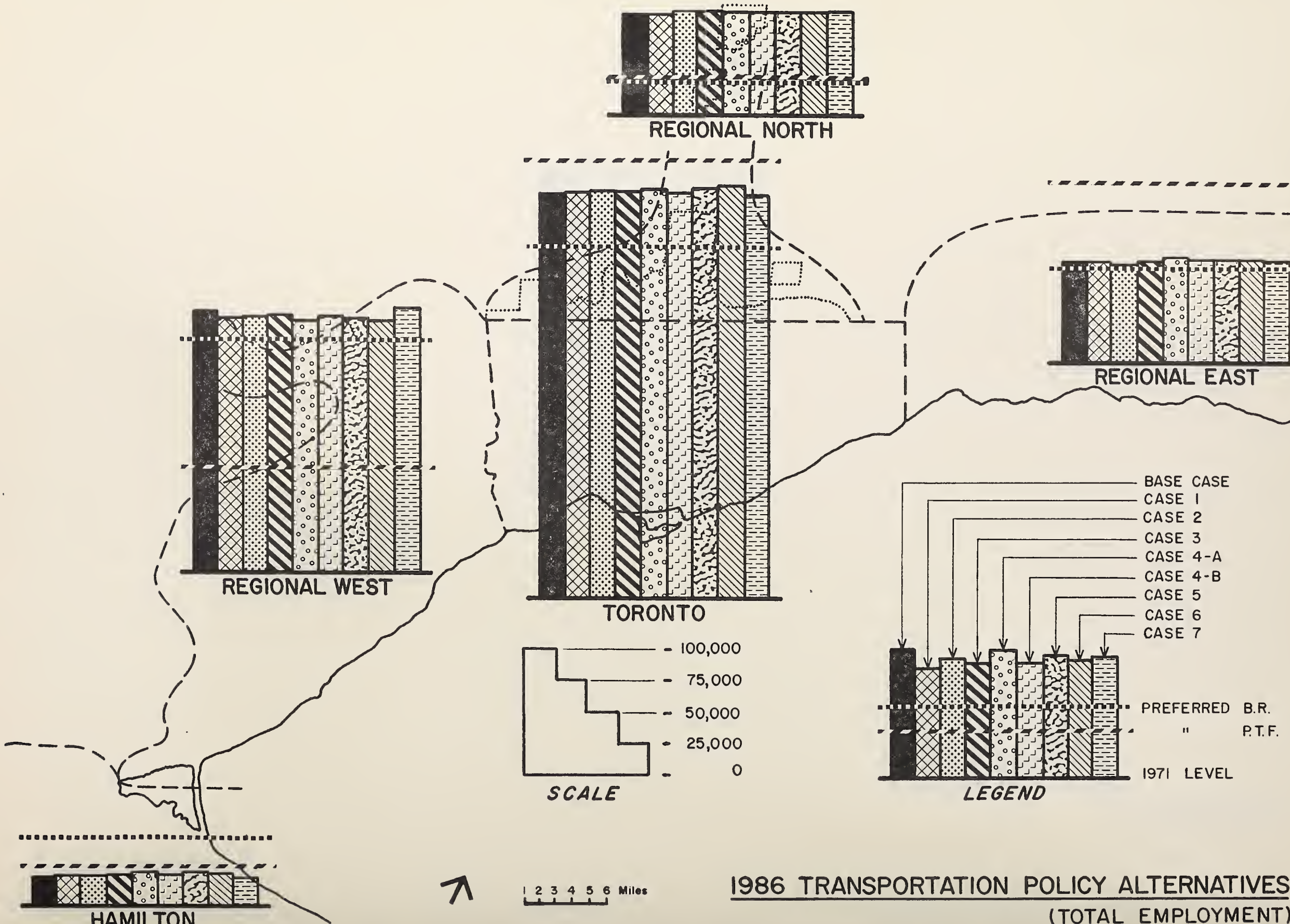
FIGURE 8



1986 TRANSPORTATION POLICY ALTERNATIVES

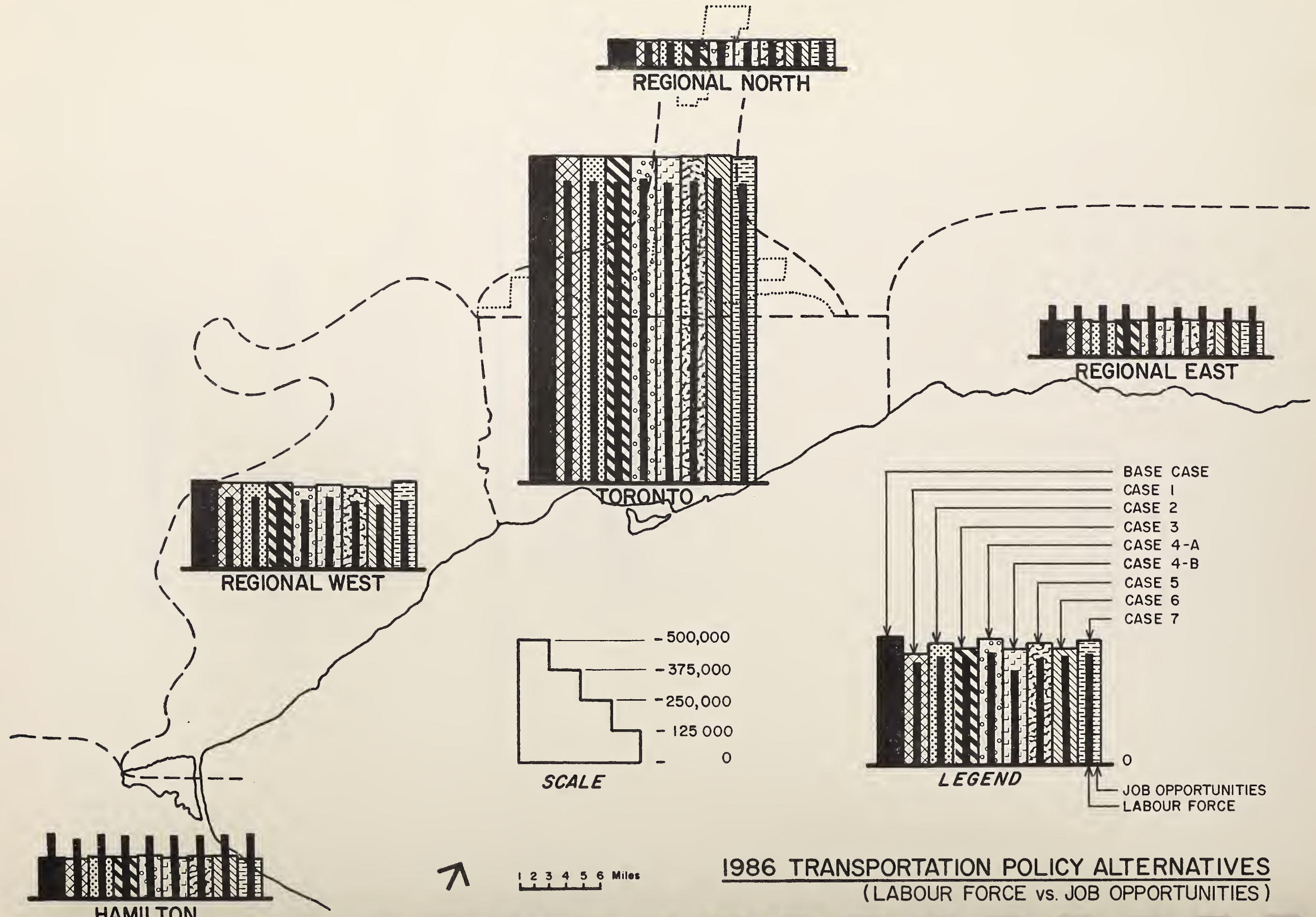
(RETAIL, SERVICE & OTHER EMPLOYMENT)

FIGURE 9



1986 TRANSPORTATION POLICY ALTERNATIVES

(TOTAL EMPLOYMENT)



1986 TRANSPORTATION POLICY ALTERNATIVES

(LABOUR FORCE vs. JOB OPPORTUNITIES)

SUMMARY FIGURES: SET 3

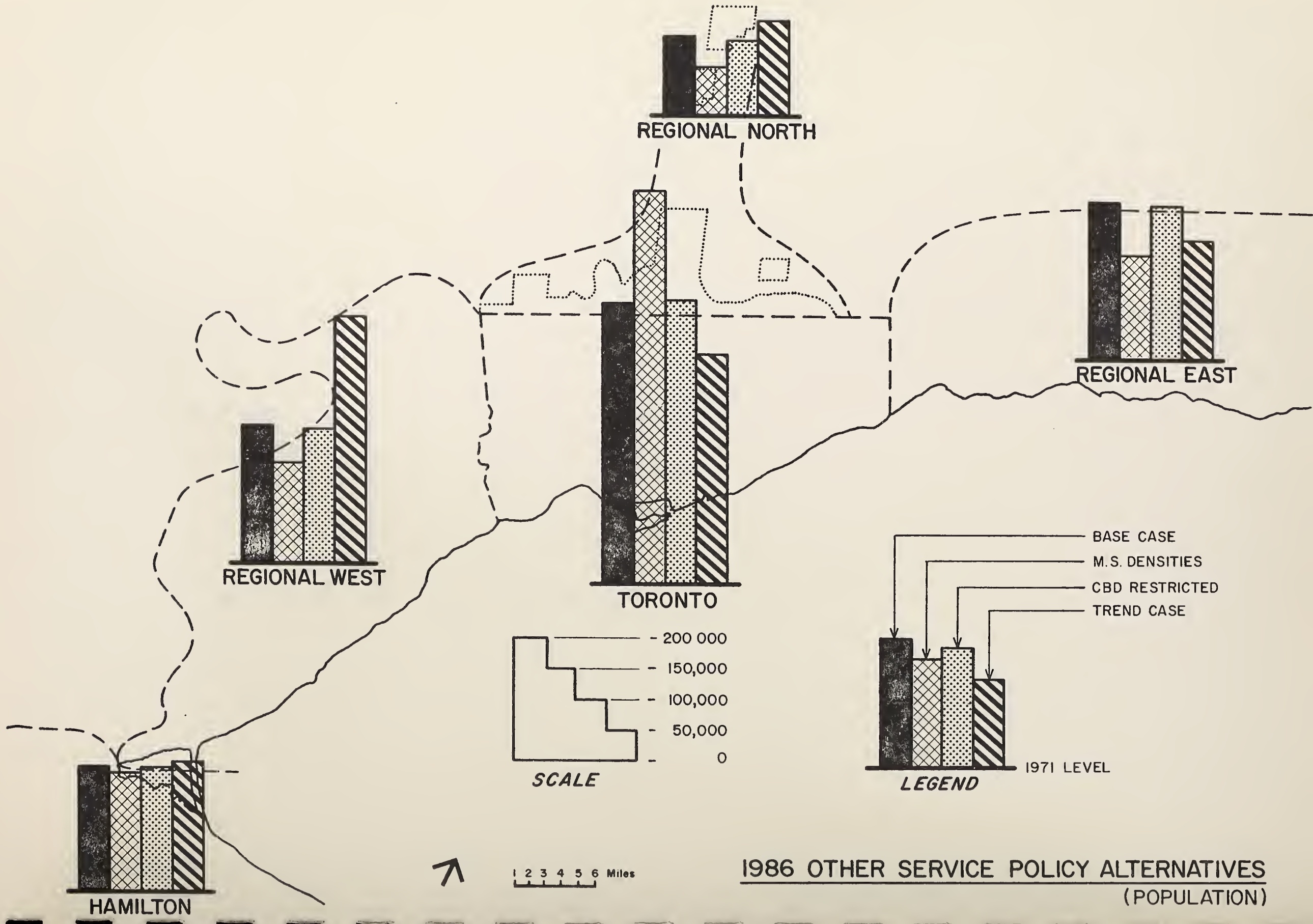
1986 OTHER SERVICE POLICY ALTERNATIVES:

: BASE CASE 1986
: CBD RESTRICTED
: TREND CASE WITH NEW AIRPORT
: MATURE STATE DENSITIES WITH NEW AIRPORT

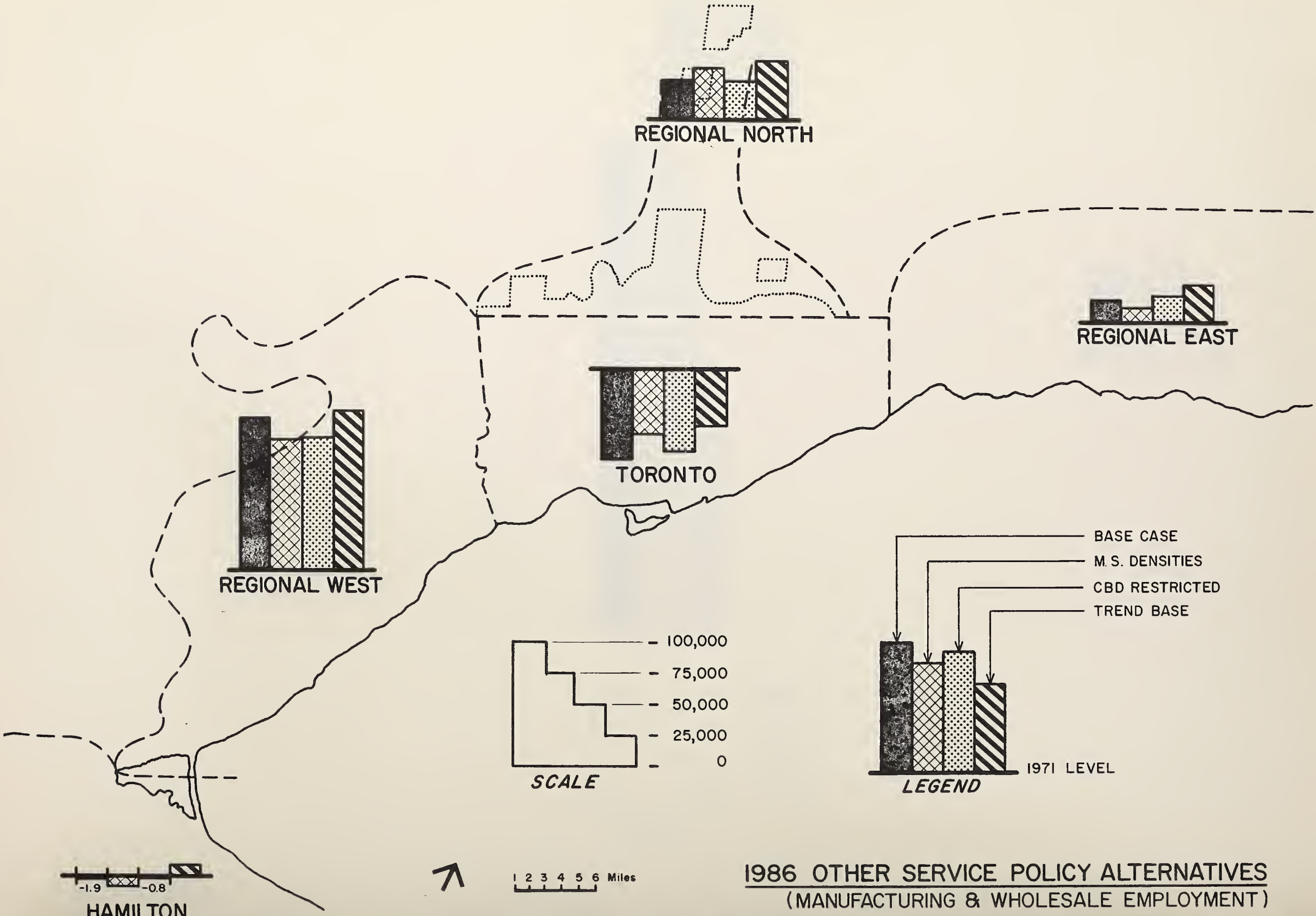
SHOWING FORECASTS CHANGES (1971-1986) FOR

- POPULATION (Figure 11)
- MANUFACTURING & WHOLESALE EMPLOYMENT (Figure 12)
- RETAIL, SERVICE & OTHER EMPLOYMENT (Figure 13)
- TOTAL EMPLOYMENT (Figure 14)

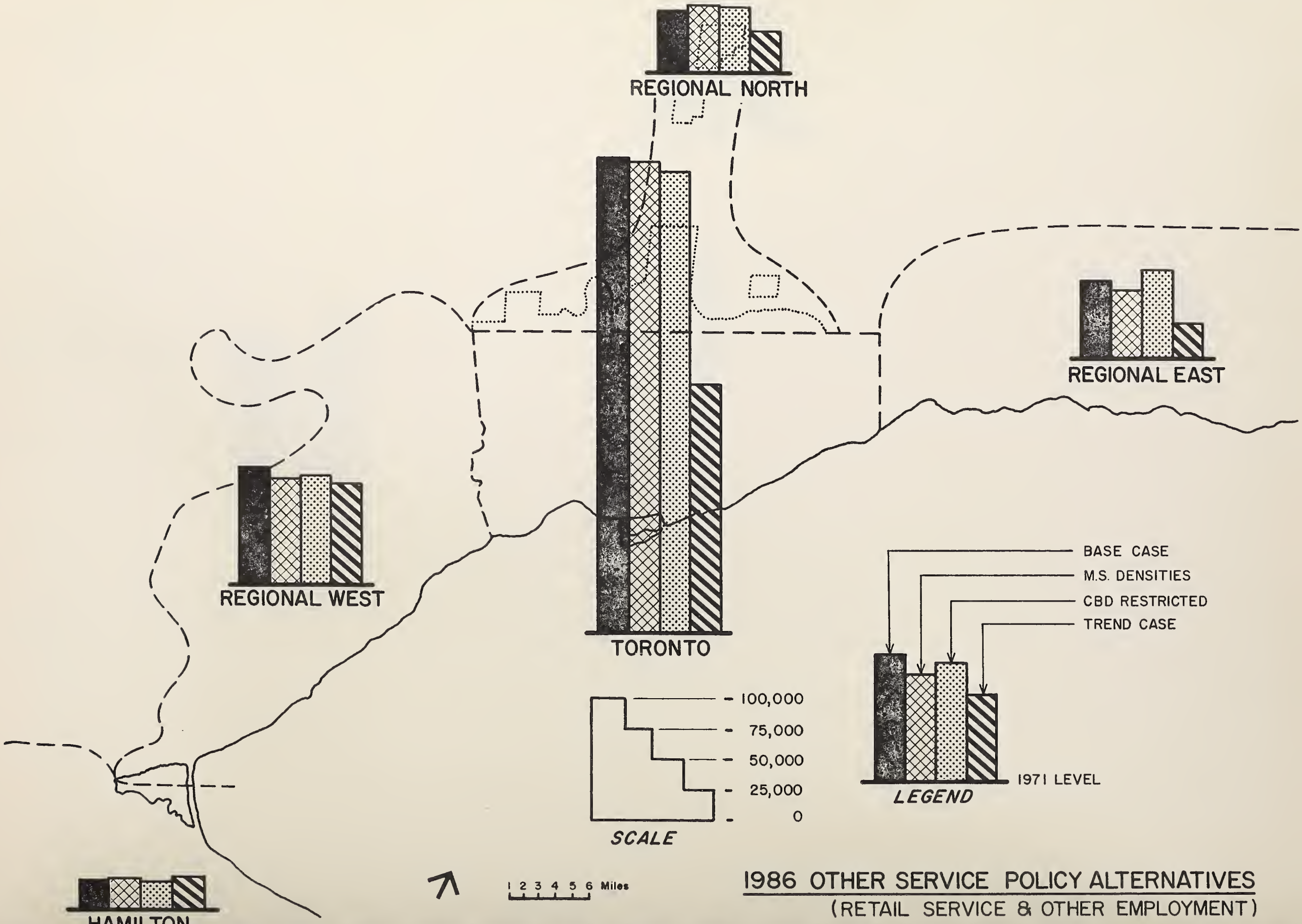
FIGURE 11



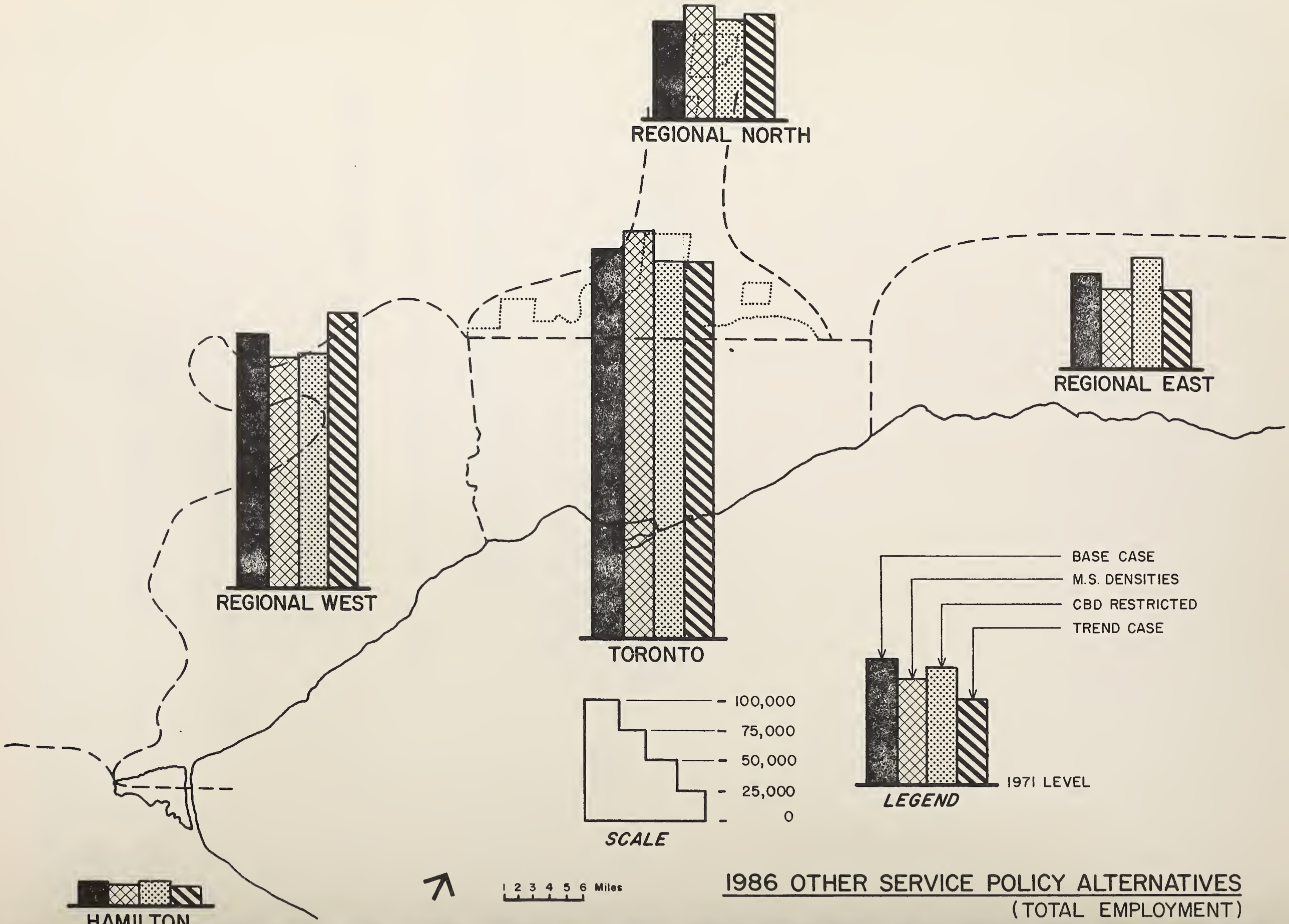
1986 OTHER SERVICE POLICY ALTERNATIVES
(POPULATION)



1986 OTHER SERVICE POLICY ALTERNATIVES
(MANUFACTURING & WHOLESALE EMPLOYMENT)



1986 OTHER SERVICE POLICY ALTERNATIVES
(RETAIL SERVICE & OTHER EMPLOYMENT)



1986 OTHER SERVICE POLICY ALTERNATIVES
(TOTAL EMPLOYMENT)

SUMMARY FIGURES: SET 4

2001 CASES:

: BASE CASE 2001
: REVISED BASE 2001
: REVISED SUPER SYSTEM 2001
: ROAD CONGESTION 2001
: ROAD CONGESTION - OSHAWA-WHITBY PIPE 2001

SHOWING FORECAST CHANGES (1971-2001) FOR

- POPULATION (Figure 15)
- MANUFACTURING & WHOLESALE EMPLOYMENT (Figure 16)
- RETAIL, SERVICE AND OTHER EMPLOYMENT (Figure 17)
- TOTAL EMPLOYMENT (Figure 18)

NOTES:

Preferences: The preferred levels shown for 2001 population correspond to the population preferences of the Combined Task Force (C.T.F.)

FIGURE 15

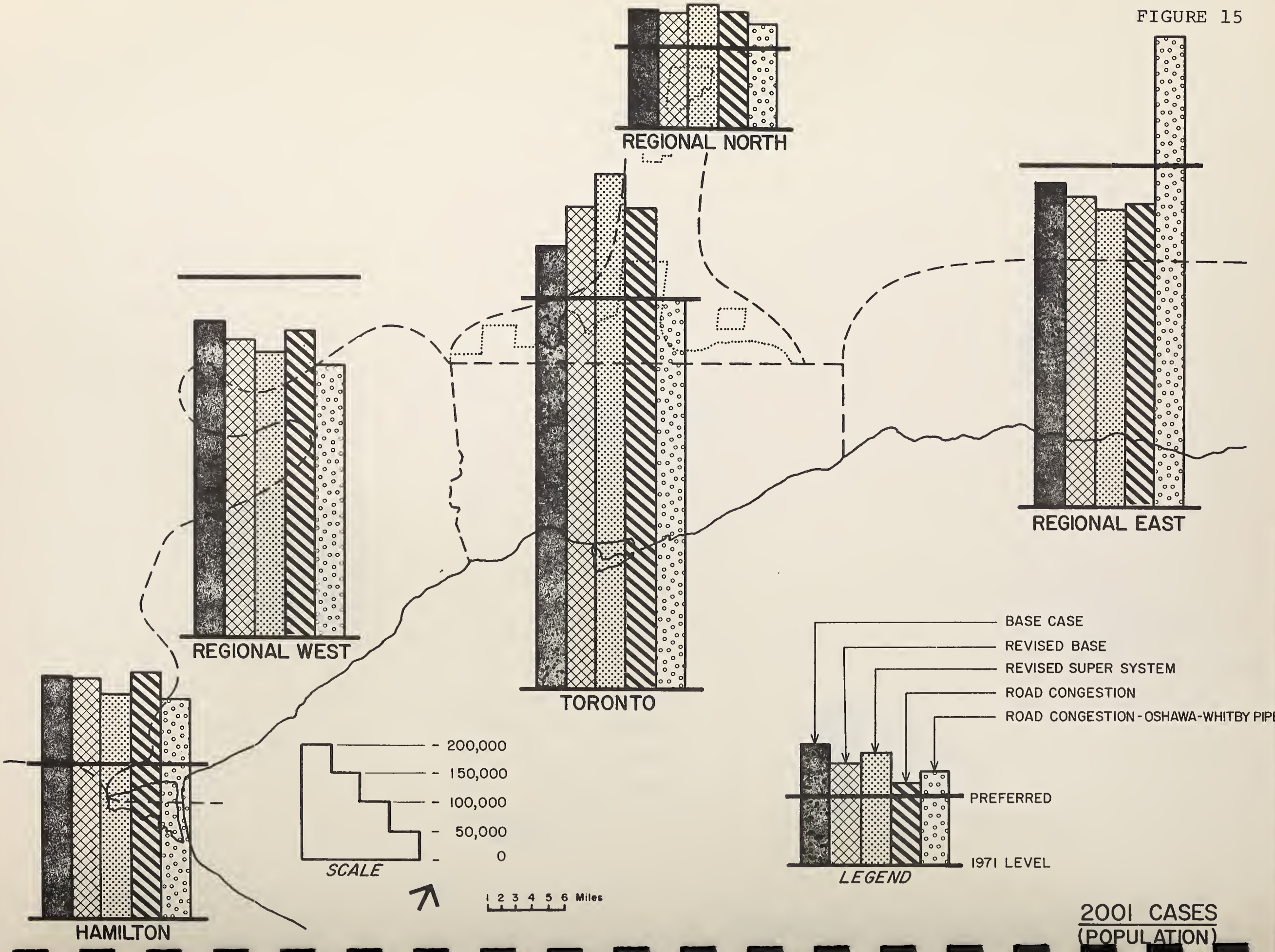
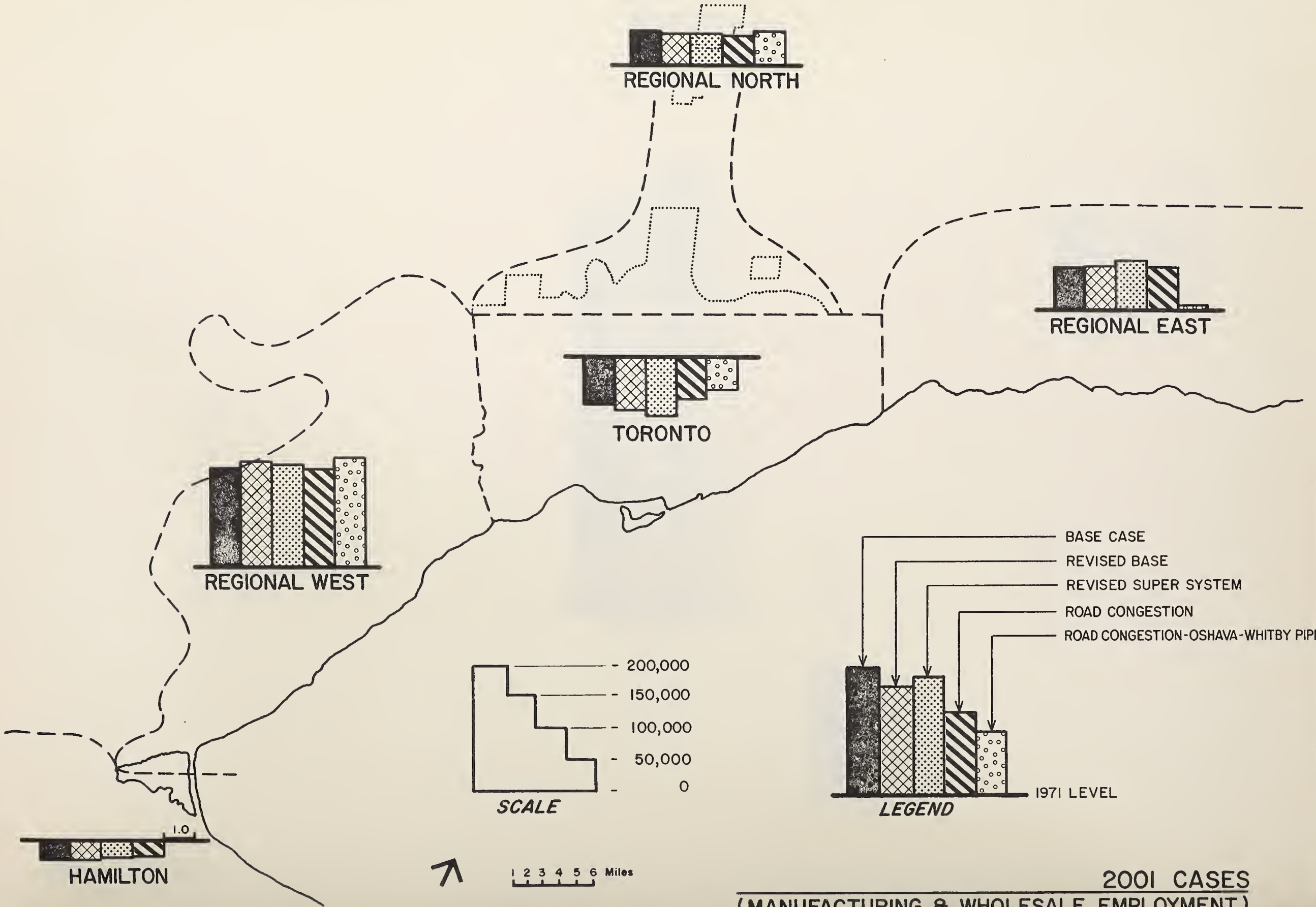

REGIONAL NORTH
REGIONAL WEST
REGIONAL EAST
TORONTO
HAMILTON
200,000
150,000
100,000
50,000
0
SCALE
1 2 3 4 5 6 Miles
BASE CASE
REVISED BASE
REVISED SUPER SYSTEM
ROAD CONGESTION
ROAD CONGESTION - OSHAWA-WHITBY PIPE
PREFERRED
1971 LEVEL
LEGEND
2001 CASES
(POPULATION)

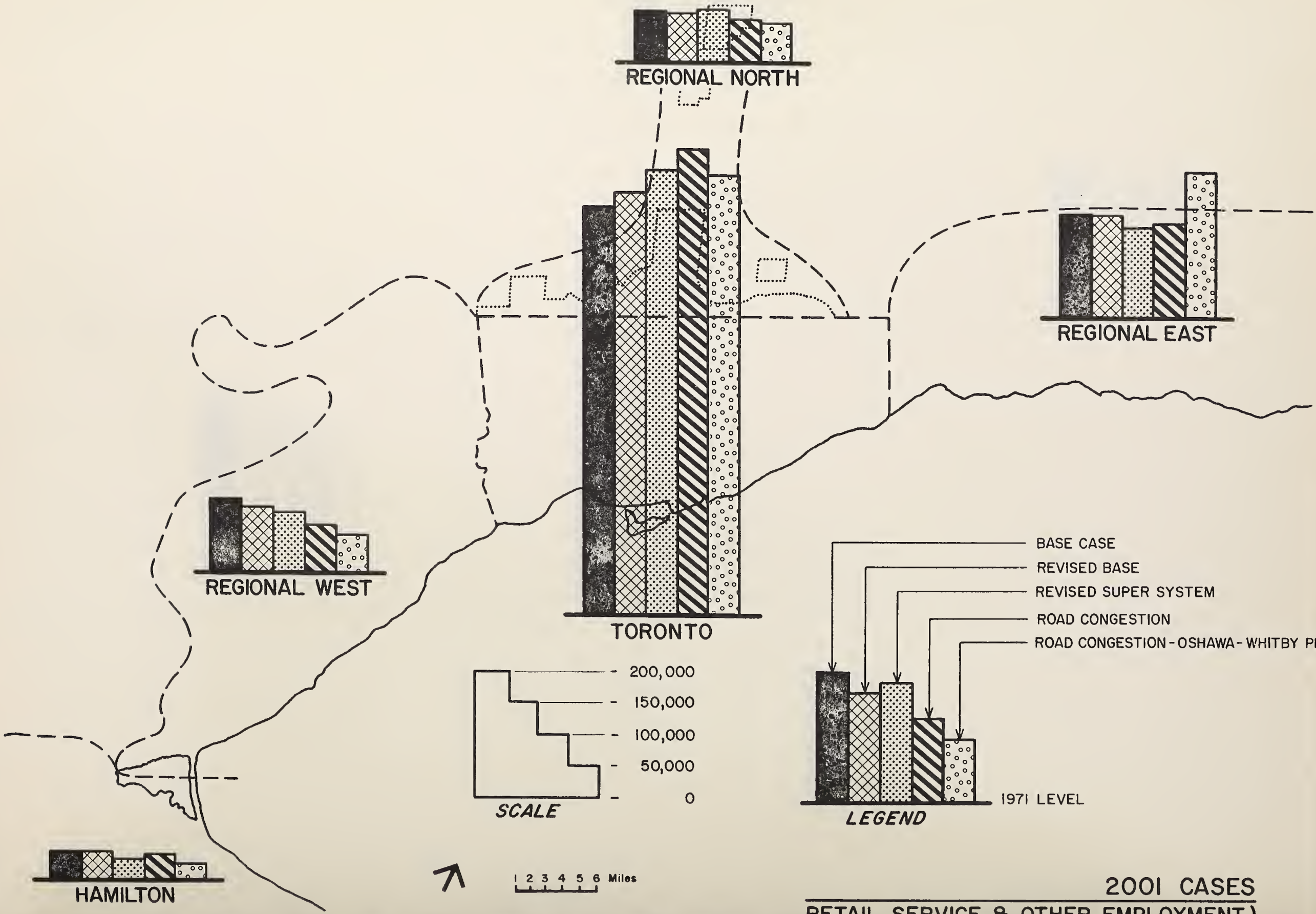
FIGURE 16



2001 CASES

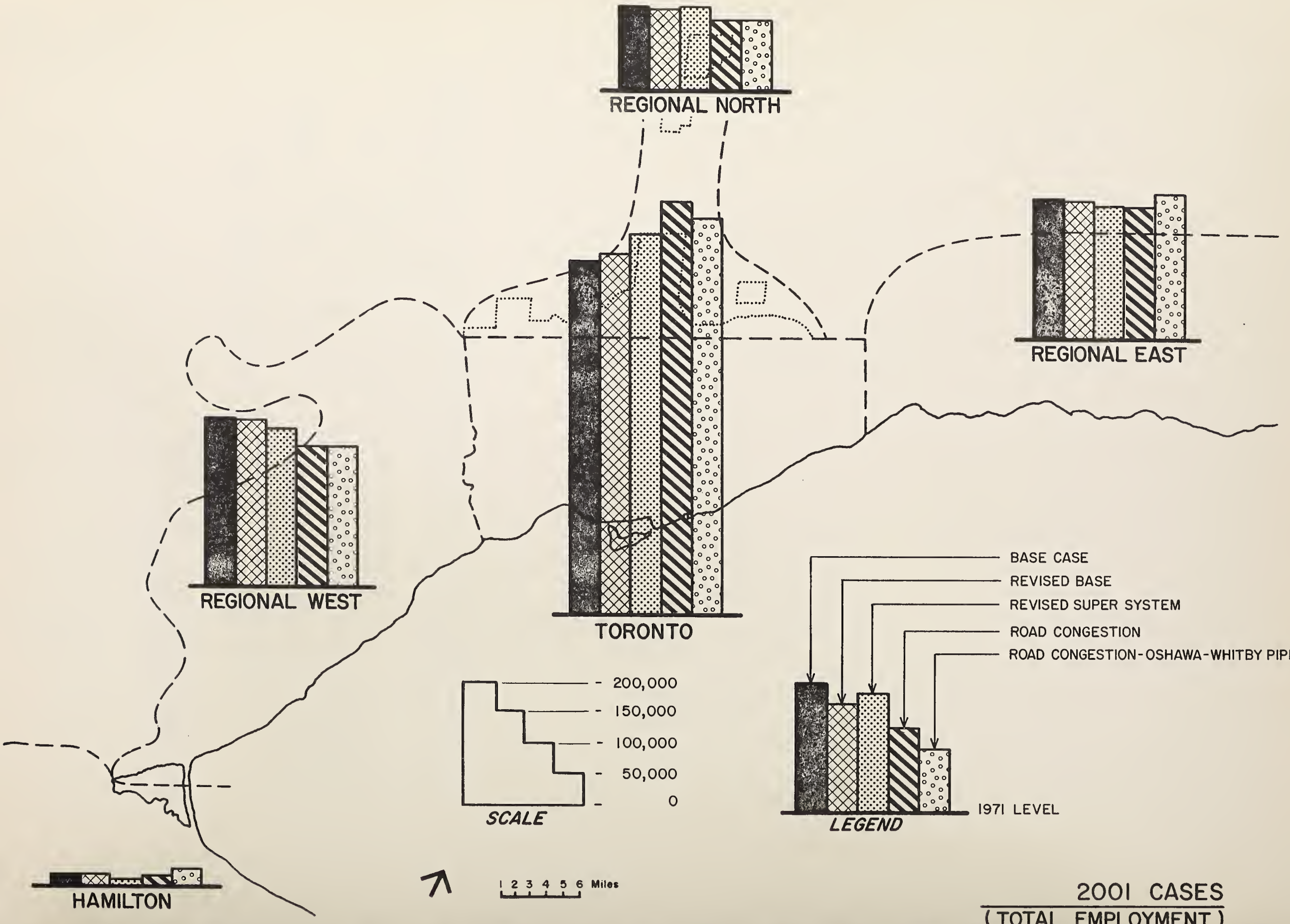
(MANUFACTURING & WHOLESALE EMPLOYMENT)

FIGURE 17



2001 CASES

RETAIL, SERVICE & OTHER EMPLOYMENT)



2001 CASES
(TOTAL EMPLOYMENT)

1986 and 2001 FORECASTS BY URBAN PLACES AND SUBREGIONS

Following are summaries of the 1986 and 2001 forecasts for each of the 27 cases studied. Each summary is presented in the same format, i.e. 1986 or 2001 population, manufacturing and wholesale employment, and retail, service and other employment forecasts are presented for each urban place and each subregion of the COLUC region.

POLICY: BASE CASE

	1986 EMPIRIC FORECAST		
	POPULATION	M/W	R/S/O
TORONTO CENTRAL	633741.	42980.	527983.
TORONTO NORTH	798411.	75737.	263542.
TORONTO WEST	562138.	132124.	78332.
TORONTO EAST	558558.	31081.	156102.
TORONTO TOTAL	2552842.	281923.	1025959.
NORTH FRINGE-RICHMOND HILL-WOODBRIDGE	118022.	21996.	34409.
MARKHAM-UNIONVILLE	41977.	7072.	21281.
AURORA-NEWMARKET	57516.	8471.	13695.
REGIONAL NORTH TOTAL	217515.	37538.	69385.
MALTON	26781.	72182.	27079.
MISSISSAUGA	213179.	17264.	44271.
ERIN MILLS	65013.	10210.	19779.
OAKVILLE	65261.	23902.	17229.
NORTH OAKVILLE-MILTON	16150.	8254.	9200.
BURLINGTON-NORTH BURLINGTON	101321.	18843.	16496.
BRAMPTON-BRAMALEA	100525.	32065.	23816.
REGIONAL WEST TOTAL	588229.	182720.	157871.
HAMILTON	536993.	65853.	96846.
HAMILTON TOTAL	536993.	65853.	96846.
SOUTH PICKERING-AJAX	85687.	12189.	21532.
NORTH PICKERING-AIRPORT	41573.	10295.	28936.
OSHAWA-WHITBY	266582.	15653.	32134.
BOWMANVILLE	20411.	4062.	4906.
AUDLEY-COLUMBUS	6287.	4263.	4616.
REGIONAL EAST TOTAL	420540.	46463.	92123.
OTHER RURAL & RESIDUAL AREAS	112889.	23503.	45828.
OTHER RURAL & RESIDUAL AREAS TOTAL	112889.	23503.	45828.
GRAND TOTAL	4428996.	638000.	1488003.

POLICY: NO NEW AIRPORT

	1986 EMPIRIC FORECAST		
	POPULATION	M/W	R/S/O
TORONTO CENTRAL	633168.	46332.	527614.
TORONTO NORTH	799071.	77561.	264470.
TORONTO WEST	564791.	134376.	81101.
TORONTO EAST	555824.	34245.	150398.
TORONTO TOTAL	2552851.	292513.	1023583.
NORTH FRINGE-RICHMOND HILL-WOODBRIDGE	118545.	22523.	35117.
MARKHAM-UNIONVILLE	41078.	6259.	19387.
AURORA-NEWMARKET	56937.	8252.	12328.
REGIONAL NORTH TOTAL	216559.	37034.	66831.
MALTON	33499.	72911.	50874.
MISSISSAUGA	214301.	17805.	46041.
ERIN MILLS	66774.	8864.	23063.
OAKVILLE	65874.	24568.	18471.
NORTH OAKVILLE-MILTON	15650.	7860.	7617.
BURLINGTON-NORTH BURLINGTON	101893.	19108.	17619.
BRAMPTON-BRAMALEA	102406.	28490.	27604.
REGIONAL WEST TOTAL	600397.	179605.	191289.
HAMILTON	540752.	66647.	103568.
HAMILTON TOTAL	540752.	66647.	103568.
SOUTH PICKERING-AJAX	84726.	12286.	19234.
NORTH PICKERING-AIRPORT	31183.	3805.	5208.
OSHAWA-WHITBY	265960.	15955.	29411.
BOWMANVILLE	20137.	3771.	4311.
AUDLEY-COLUMBUS	5344.	3935.	2770.
REGIONAL EAST TOTAL	407350.	39754.	60933.
OTHER RURAL & RESIDUAL AREAS	111108.	22448.	41808.
OTHER RURAL & RESIDUAL AREAS TOTAL	111108.	22448.	41808.
GRAND TOTAL	4429004.	638000.	1487999.

POLICY: MATURE STATE DENSITIES WITH NEW AIRPORT

	1986 EMPIRIC FORECAST		
	POPULATION	M/W	R/S/O
TORONTO CENTRAL	660718.	44847.	435150.
TORONTO NORTH	874595.	108251.	313078.
TORONTO WEST	583856.	114070.	99879.
TORONTO EAST	609588.	35927.	174267.
TORONTO TOTAL	2728753.	303095.	1022374.
NORTH FRINGE-RICHMOND HILL-WOODBRIDGE	79430.	26953.	31463.
MARKHAM-UNIONVILLE	43673.	12192.	25978.
AURORA-NEWMARKET	49393.	9351.	15254.
REGIONAL NORTH TOTAL	172496.	48497.	72694.
MALTON	23027.	63064.	26178.
MISSISSAUGA	180458.	15751.	42751.
ERIN MILLS	60319.	11410.	21182.
OAKVILLE	58036.	23594.	14421.
NORTH OAKVILLE-MILTON	16500.	7774.	9905.
BURLINGTON-NORTH BURLINGTON	104143.	16392.	17532.
BRAMPTON-BRAMALEA	89944.	28946.	25794.
REGIONAL WEST TOTAL	532428.	166930.	157764.
HAMILTON	529190.	58974.	99502.
HAMILTON TOTAL	529190.	58974.	99502.
SOUTH PICKERING-AJAX	64129.	10280.	16386.
NORTH PICKERING-AIRPORT	34853.	5454.	27566.
OSHAWA-WHITBY	184294.	20038.	28636.
BOWMANVILLE	45542.	1633.	6480.
AUDLEY-COLUMBUS	9511.	2866.	5994.
REGIONAL EAST TOTAL	338329.	40271.	85061.
OTHER RURAL & RESIDUAL AREAS	127819.	20234.	50618.
OTHER RURAL & RESIDUAL AREAS TOTAL	127819.	20234.	50618.
GRAND TOTAL	4429002.	638000.	1488002.

POLICY: MATURE STATE DENSITIES WITHOUT NEW AIRPORT

	1986 EMPIRIC FORECAST		
	POPULATION	M/W	R/S/O
TORONTO CENTRAL	661094.	46178.	436061.
TORONTO NORTH	875021.	108047.	314553.
TORONTO WEST	585462.	113169.	103727.
TORONTO EAST	606990.	34659.	168861.
TORONTO TOTAL	2728564.	302053.	1023203.
NORTH FRINGE-RICHMOND HILL-WOODBRIDGE	79637.	27204.	31871.
MARKHAM-UNIONVILLE	42406.	11914.	23212.
AURORA-NEWMARKET	48625.	9248.	13543.
REGIONAL NORTH TOTAL	170668.	48366.	68625.
MALTON	31789.	65996.	47817.
MISSISSAUGA	181367.	15938.	44608.
ERIN MILLS	61617.	11727.	23804.
OAKVILLE	58559.	23843.	15565.
NORTH OAKVILLE-MILTON	17229.	7980.	11477.
BURLINGTON-NORTH BURLINGTON	104787.	16608.	18938.
BRAMPTON-BRAMALEA	90974.	29383.	27934.
REGIONAL WEST TOTAL	546321.	171476.	190142.
HAMILTON	530022.	59110.	101144.
HAMILTON TOTAL	530022.	59110.	101144.
SOUTH PICKERING-AJAX	63095.	10111.	14028.
NORTH PICKERING-AIRPORT	26717.	3019.	7304.
OSHAWA-WHITBY	183213.	19837.	26061.
BOWMANVILLE	45185.	1518.	5613.
AUDLEY-COLUMBUS	8390.	2582.	3547.
REGIONAL EAST TOTAL	326601.	37067.	56552.
OTHER RURAL & RESIDUAL AREAS	126840.	19928.	48343.
OTHER RURAL & RESIDUAL AREAS TOTAL	126840.	19928.	48343.
GRAND TOTAL	4429002.	638000.	1487997.

POLICY: CBD RESTRICTED

	1986 EMPIRIC FORECAST		
	POPULATION	M/W	R/S/O
TORONTO CENTRAL	634282.	43234.	508946.
TORONTO NORTH	798475.	75930.	266099.
TORONTO WEST	562143.	133684.	78589.
TORONTO EAST	558641.	33871.	158313.
TORONTO TOTAL	2553536.	286719.	1011948.
NORTH FRINGE-RICHMOND HILL-WOODBRIDGE	118029.	23068.	34969.
MARKHAM-UNIONVILLE	41985.	7601.	21716.
AURORA-NEWMARKET	57517.	8762.	13947.
REGIONAL NORTH TOTAL	217531.	39431.	70632.
MALTON	26781.	55389.	27079.
MISSISSAUGA	213187.	17459.	44913.
ERIN MILLS	65020.	10858.	20120.
OAKVILLE	65263.	24578.	17344.
NORTH OAKVILLE-MILTON	16151.	8796.	9255.
BURLINGTON-NORTH BURLINGTON	101319.	19309.	16560.
BRAMPTON-BRAMALEA	100523.	33308.	23850.
REGIONAL WEST TOTAL	588244.	169698.	159121.
HAMILTON	536978.	66969.	97254.
HAMILTON TOTAL	536978.	66969.	97254.
SOUTH PICKERING-AJAX	85691.	12498.	21908.
NORTH PICKERING-AIRPORT	41573.	10295.	28936.
OSHAWA-WHITBY	265834.	18486.	41826.
BOWMANVILLE	20414.	4204.	4886.
AUDLEY-COLUMBUS	6305.	4557.	4743.
REGIONAL EAST TOTAL	419816.	50039.	102298.
OTHER RURAL & RESIDUAL AREAS	112909.	25144.	46762.
OTHER RURAL & RESIDUAL AREAS TOTAL	112909.	25144.	46762.
GRAND TOTAL	4428999.	637999.	1488002.

POLICY: TREND CASE WITH NEW AIRPORT

	1986 EMPIRIC FORECAST		
	POPULATION	M/W	R/S/O
TORONTO CENTRAL	687623.	66201.	459463.
TORONTO NORTH	764811.	95101.	222395.
TORONTO WEST	507065.	166805.	61789.
TORONTO EAST	507585.	66455.	97119.
TORONTO TOTAL	2467077.	394562.	840765.
NORTH FRINGE-RICHMOND HILL-WOODBRIDGE	129374.	32352.	25293.
MARKHAM-UNIONVILLE	63111.	12553.	15773.
AURORA-NEWMARKET	56910.	11818.	10640.
REGIONAL NORTH TOTAL	249395.	56723.	51707.
MALTON	52421.	61144.	49829.
MISSISSAUGA	260102.	23727.	34175.
ERIN MILLS	49828.	14654.	12839.
OAKVILLE	107470.	22399.	15355.
NORTH OAKVILLE-MILTON	29379.	13202.	6959.
BURLINGTON-NORTH BURLINGTON	129640.	22086.	13402.
BRAMPTON-BRAMALEA	135779.	31471.	22161.
REGIONAL WEST TOTAL	764619.	188683.	154719.
HAMILTON	550784.	75715.	77218.
HAMILTON TOTAL	550784.	75715.	77218.
SOUTH PICKERING-AJAX	102356.	13977.	14360.
NORTH PICKERING-AIRPORT	24118.	13837.	13811.
OSHAWA-WHITBY	213718.	27126.	22249.
BOWMANVILLE	16387.	1801.	4217.
AUDLEY-COLUMBUS	6777.	4224.	4180.
REGIONAL EAST TOTAL	363356.	60964.	58816.
OTHER RURAL & RESIDUAL AREAS	104779.	26354.	36779.
OTHER RURAL & RESIDUAL AREAS TOTAL	104779.	26354.	36779.
GRAND TOTAL	4499997.	803000.	1219996.

POLICY: TREND CASE WITHOUT NEW AIRPORT

	1986 EMPIRIC FORECAST		
	POPULATION	M/W	R/S/O
TORONTO CENTRAL	689241.	67369.	464898.
TORONTO NORTH	766550.	95169.	227052.
TORONTO WEST	510326.	167838.	67558.
TORONTO EAST	504338.	65528.	91947.
TORONTO TOTAL	2470447.	395904.	851454.
NORTH FRINGE-RICHMOND HILL-WOODBRIDGE	129599.	32654.	25359.
MARKHAM-UNIONVILLE	61816.	11802.	13451.
AURORA-NEWMARKET	56239.	11553.	9226.
REGIONAL NORTH TOTAL	247655.	56009.	48035.
MALTON	52421.	67287.	49829.
MISSISSAUGA	261064.	24410.	35848.
ERIN MILLS	50986.	15486.	14750.
OAKVILLE	108305.	22900.	16734.
NORTH OAKVILLE-MILTON	30121.	13804.	8210.
BURLINGTON-NORTH BURLINGTON	130411.	22762.	14771.
BRAMPTON-BRAMALEA	136715.	32380.	23807.
REGIONAL WEST TOTAL	770021.	199029.	163948.
HAMILTON	552539.	76096.	78884.
HAMILTON TOTAL	552539.	76096.	78884.
SOUTH PICKERING-AJAX	101551.	13377.	12559.
NORTH PICKERING-AIRPORT	19124.	4385.	3383.
OSHAWA-WHITBY	212797.	26503.	19829.
BOWMANVILLE	16010.	1644.	3581.
AUDLEY-COLUMBUS	5679.	3660.	2301.
REGIONAL EAST TOTAL	355161.	49569.	41653.
OTHER RURAL & RESIDUAL AREAS	104184.	26394.	36032.
OTHER RURAL & RESIDUAL AREAS TOTAL	104184.	26394.	36032.
GRAND TOTAL	4499993.	802999.	1220000.

POLICY: YORK PIPE

	1986 EMPIRIC FORECAST		
	POPULATION	M/W	R/S/O
TORONTO CENTRAL	594287.	46514.	524622.
TORONTO NORTH	757458.	77255.	262632.
TORONTO WEST	529710.	133997.	77710.
TORONTO EAST	518505.	34612.	155196.
TORONTO TOTAL	2399954.	292379.	1020160.
NORTH FRINGE-RICHMOND HILL-WOODBRIDGE	204104.	21207.	36701.
MARKHAM-UNIONVILLE	88063.	7209.	21746.
AURORA-NEWMARKET	65695.	8506.	13960.
REGIONAL NORTH TOTAL	357862.	36922.	72406.
MALTON	25451.	70137.	27844.
MISSISSAUGA	194359.	17203.	44098.
ERIN MILLS	59960.	8534.	20640.
OAKVILLE	58704.	24287.	17106.
NORTH OAKVILLE-MILTON	14051.	7722.	7246.
BURLINGTON-NORTH BURLINGTON	92500.	18781.	16252.
BRAMPTON-BRAMALEA	94885.	28199.	25771.
REGIONAL WEST TOTAL	539911.	174863.	158958.
HAMILTON	502477.	66592.	99636.
HAMILTON TOTAL	502477.	66592.	99636.
SOUTH PICKERING-AJAX	125103.	14442.	20538.
NORTH PICKERING-AIRPORT	131749.	6045.	29707.
OSHAWA-WHITBY	243711.	16358.	32201.
BOWMANVILLE	18342.	3782.	5044.
AUDLEY-COLUMBUS	5677.	4152.	4773.
REGIONAL EAST TOTAL	524582.	44780.	92262.
OTHER RURAL & RESIDUAL AREAS	104226.	22465.	44590.
OTHER RURAL & RESIDUAL AREAS TOTAL	104226.	22465.	44590.
GRAND TOTAL	4428999.	638000.	1488000.

POLICY: OSHAWA-WHITBY PIPE

	1986 EMPIRIC FORECAST		
	POPULATION	M/W	R/S/O
TORONTO CENTRAL	585865.	46521.	524115.
TORONTO NORTH	750064.	77219.	262377.
TORONTO WEST	523152.	133893.	77613.
TORONTO EAST	511563.	34530.	155061.
TORONTO TOTAL	2370637.	292163.	1019166.
NORTH FRINGE-RICHMOND HILL-WOODBRIDGE	107099.	22240.	34397.
MARKHAM-UNIONVILLE	38543.	6461.	21705.
AURORA-NEWMARKET	51683.	8262.	13798.
REGIONAL NORTH TOTAL	197325.	36963.	69901.
MALTON	25174.	70129.	27816.
MISSISSAUGA	191850.	17168.	44034.
ERIN MILLS	59034.	8484.	20614.
OAKVILLE	57567.	24232.	17086.
NORTH OAKVILLE-MILTON	13871.	7692.	7235.
BURLINGTON-NORTH BURLINGTON	91130.	18738.	16229.
BRAMPTON-BRAMALEA	93834.	28127.	25749.
REGIONAL WEST TOTAL	532460.	174571.	158763.
HAMILTON	496173.	66692.	99448.
HAMILTON TOTAL	496173.	66692.	99448.
SOUTH PICKERING-AJAX	154168.	11905.	23640.
NORTH PICKERING-AIRPORT	128722.	6040.	30616.
OSHAWA-WHITBY	302005.	16821.	32212.
BOWMANVILLE	17961.	3803.	5094.
AUDLEY-COLUMBUS	126220.	6690.	4662.
REGIONAL EAST TOTAL	729077.	45260.	96223.
OTHER RURAL & RESIDUAL AREAS	103336.	22352.	44512.
OTHER RURAL & RESIDUAL AREAS TOTAL	103336.	22352.	44512.
GRAND TOTAL	4428993.	637999.	1488000.

POLICY: PEEL PIPE

	1986 EMPIRIC FORECAST		
	POPULATION	M/W	R/S/O
TORONTO CENTRAL	585101.	47802.	520761.
TORONTO NORTH	750615.	78213.	260668.
TORONTO WEST	525692.	135648.	76807.
TORONTO EAST	514542.	36915.	152348.
TORONTO TOTAL	2375943.	298578.	1010584.
NORTH FRINGE-RICHMOND HILL-WOODBRIDGE	107388.	23022.	33998.
MARKHAM-UNIONVILLE	38757.	6754.	21393.
AURORA-NEWMARKET	51870.	8497.	13609.
REGIONAL NORTH TOTAL	198015.	38273.	69000.
MALTON	38536.	69819.	31259.
MISSISSAUGA	307428.	7884.	49496.
ERIN MILLS	179879.	3381.	25699.
OAKVILLE	57279.	24840.	17347.
NORTH OAKVILLE-MILTON	13488.	8060.	7767.
BURLINGTON-NORTH BURLINGTON	91367.	19159.	16044.
BRAMPTON-BRAMALEA	187602.	29441.	27652.
REGIONAL WEST TOTAL	875579.	162584.	175262.
HAMILTON	496134.	69274.	98169.
HAMILTON TOTAL	496134.	69274.	98169.
SOUTH PICKERING-AJAX	76670.	12626.	21036.
NORTH PICKERING-AIRPORT	38407.	7221.	28942.
OSHAWA-WHITBY	240768.	17983.	31242.
BOWMANVILLE	18186.	3861.	4937.
AUDLEY-COLUMBUS	5709.	4234.	4689.
REGIONAL EAST TOTAL	379740.	45925.	90845.
OTHER RURAL & RESIDUAL AREAS	103598.	23366.	44155.
OTHER RURAL & RESIDUAL AREAS TOTAL	103598.	23366.	44155.
GRAND TOTAL	4428995.	637999.	1488002.

POLICY: ALL PIPES

	1986 EMPIRIC FORECAST		
	POPULATION	M/W	R/S/O
TORONTO CENTRAL	537758.	45343.	520844.
TORONTO NORTH	697936.	76406.	260294.
TORONTO WEST	479151.	133397.	76201.
TORONTO EAST	463015.	33823.	152256.
TORONTO TOTAL	2177853.	288968.	1009595.
NORTH FRINGE-RICHMOND HILL-WOODBRIDGE	176297.	21431.	35623.
MARKHAM-UNIONVILLE	76213.	8011.	20949.
AURORA-NEWMARKET	56474.	8651.	13529.
REGIONAL NORTH TOTAL	308984.	38092.	70100.
MALTON	34368.	71898.	30133.
MISSISSAUGA	267281.	6617.	49050.
ERIN MILLS	156847.	5067.	24463.
OAKVILLE	47598.	24172.	17234.
NORTH OAKVILLE-MILTON	12407.	8610.	9482.
BURLINGTON-NORTH BURLINGTON	79385.	18853.	16038.
BRAMPTON-BRAMALEA	164884.	32965.	25535.
REGIONAL WEST TOTAL	762770.	168183.	171935.
HAMILTON	450612.	69528.	93374.
HAMILTON TOTAL	450612.	69528.	93374.
SOUTH PICKERING-AJAX	133695.	11768.	22842.
NORTH PICKERING-AIRPORT	112895.	8931.	34368.
OSHAWA-WHITBY	265211.	17545.	31355.
BOWMANVILLE	14876.	4067.	4814.
AUDLEY-COLUMBUS	108640.	6608.	4480.
REGIONAL EAST TOTAL	635317.	48919.	97859.
OTHER RURAL & RESIDUAL AREAS	93475.	24309.	45152.
OTHER RURAL & RESIDUAL AREAS TOTAL	93475.	24309.	45152.
GRAND TOTAL	4428999.	637999.	1488005.

POLICY: TRANSPORTATION CASE 1

	1986 EMPIRIC FORECAST		
	POPULATION	M/W	R/S/O
TORONTO CENTRAL	636239.	42863.	529627.
TORONTO NORTH	794115.	75712.	263227.
TORONTO WEST	563880.	132066.	78781.
TORONTO EAST	559969.	30921.	156642.
TORONTO TOTAL	2554197.	281562.	1028276.
NORTH FRINGE-RICHMOND HILL-WOODBRIDGE	118239.	21943.	34332.
MARKHAM-UNIONVILLE	42103.	7044.	21228.
AURORA-NEWMARKET	57637.	8457.	13671.
REGIONAL NORTH TOTAL	217979.	37444.	69231.
MALTON	26951.	72143.	27223.
MISSISSAUGA	213308.	17250.	44134.
ERIN MILLS	65040.	10175.	19706.
OAKVILLE	64930.	23854.	17276.
NORTH OAKVILLE-MILTON	15346.	8201.	6936.
BURLINGTON-NORTH BURLINGTON	100257.	18784.	16247.
BRAMPTON-BRAMALEA	100703.	31998.	23903.
REGIONAL WEST TOTAL	586535.	182404.	155426.
HAMILTON	538795.	65910.	99968.
HAMILTON TOTAL	538795.	65910.	99968.
SOUTH PICKERING-AJAX	85707.	12170.	21483.
NORTH PICKERING-AIRPORT	41653.	10293.	29053.
OSHAWA-WHITBY	265535.	16383.	31591.
BOWMANVILLE	20204.	4151.	4790.
AUDLEY-COLUMBUS	6210.	4288.	4561.
REGIONAL EAST TOTAL	419309.	47286.	91478.
OTHER RURAL & RESIDUAL AREAS	112199.	23394.	43636.
OTHER RURAL & RESIDUAL AREAS TOTAL	112199.	23394.	43636.
GRAND TOTAL	4429000.	637999.	1488004.

POLICY: TRANSPORTATION CASE 2

	1986 EMPIRIC FORECAST		
	POPULATION	M/W	R/S/O
TORONTO CENTRAL	646158.	42356.	537544.
TORONTO NORTH	791199.	75509.	261611.
TORONTO WEST	564721.	132531.	77827.
TORONTO EAST	554714.	31825.	152060.
TORONTO TOTAL	2556786.	282221.	1029041.
NORTH FRINGE-RICHMOND HILL-WOODBRIDGE	118006.	22274.	34181.
MARKHAM-UNIONVILLE	42499.	7034.	21483.
AURORA-NEWMARKET	57775.	8439.	13727.
REGIONAL NORTH TOTAL	218281.	37747.	69391.
MALTON	25718.	71778.	27153.
MISSISSAUGA	214707.	17238.	44161.
ERIN MILLS	65679.	10173.	19865.
OAKVILLE	65478.	23850.	17303.
NORTH OAKVILLE-MILTON	15508.	8201.	7073.
BURLINGTON-NORTH BURLINGTON	100984.	18795.	16044.
BRAMPTON-BRAMALEA	100785.	31942.	24054.
REGIONAL WEST TOTAL	588861.	181977.	155653.
HAMILTON	530656.	65223.	100004.
HAMILTON TOTAL	530656.	65223.	100004.
SOUTH PICKERING-AJAX	86427.	12164.	21565.
NORTH PICKERING-AIRPORT	41358.	10236.	27917.
OSHAWA-WHITBY	267312.	16394.	31234.
BOWMANVILLE	20390.	4152.	4776.
AUDLEY-COLUMBUS	6297.	4288.	4611.
REGIONAL EAST TOTAL	421784.	47233.	90103.
OTHER RURAL & RESIDUAL AREAS	112647.	23599.	43820.
OTHER RURAL & RESIDUAL AREAS TOTAL	112647.	23599.	43820.
GRAND TOTAL	4429000.	637999.	1488001.

POLICY: TRANSPORTATION CASE 3

	1986 EMPIRIC FORECAST		
	POPULATION	M/W	R/S/O
TORONTO CENTRAL	647601.	41316.	539626.
TORONTO NORTH	791659.	74901.	262067.
TORONTO WEST	565085.	132009.	78000.
TORONTO EAST	551958.	34495.	149176.
TORONTO TOTAL	2556296.	282721.	1028869.
NORTH FRINGE-RICHMOND HILL-WOODBRIDGE	118093.	22023.	34267.
MARKHAM-UNIONVILLE	42557.	6910.	21562.
AURORA-NEWMARKET	57810.	8358.	13763.
REGIONAL NORTH TOTAL	218460.	37291.	69592.
MALTON	25890.	71327.	27240.
MISSISSAUGA	214846.	17135.	44229.
ERIN MILLS	65763.	10034.	19923.
OAKVILLE	65541.	23703.	17336.
NORTH OAKVILLE-MILTON	15531.	8098.	7104.
BURLINGTON-NORTH BURLINGTON	101063.	18702.	16043.
BRAMPTON-BRAMALEA	100893.	31645.	24132.
REGIONAL WEST TOTAL	589526.	180644.	156006.
HAMILTON	531073.	65284.	99997.
HAMILTON TOTAL	531073.	65284.	99997.
SOUTH PICKERING-AJAX	86519.	12076.	21624.
NORTH PICKERING-AIRPORT	40156.	11975.	27339.
OSHAWA-WHITBY	267528.	16362.	31255.
BOWMANVILLE	20410.	4116.	4785.
AUDLEY-COLUMBUS	6308.	4229.	4631.
REGIONAL EAST TOTAL	420920.	48758.	89634.
OTHER RURAL & RESIDUAL AREAS	112734.	23302.	43915.
OTHER RURAL & RESIDUAL AREAS TOTAL	112734.	23302.	43915.
GRAND TOTAL	4428998.	638000.	1488000.

POLICY: TRANSPORTATION CASE 4A

	1986 EMPIRIC FORECAST		
	POPULATION	M/W	R/S/O
TORONTO CENTRAL	650597.	37707.	545829.
TORONTO NORTH	793980.	73188.	263992.
TORONTO WEST	566047.	130732.	78629.
TORONTO EAST	553154.	31463.	151192.
TORONTO TOTAL	2563773.	273090.	1039642.
NORTH FRINGE-RICHMOND HILL-WOODBRIDGE	118397.	21377.	34544.
MARKHAM-UNIONVILLE	42679.	6590.	21788.
AURORA-NEWMARKET	57966.	8159.	13885.
REGIONAL NORTH TOTAL	219043.	36125.	70216.
MALTON	26004.	70177.	26730.
MISSISSAUGA	211657.	19010.	41207.
ERIN MILLS	65989.	9674.	20095.
OAKVILLE	65116.	24326.	16474.
NORTH OAKVILLE-MILTON	15596.	7828.	7198.
BURLINGTON-NORTH BURLINGTON	100732.	19196.	15031.
BRAMPTON-BRAMALEA	101182.	30892.	24356.
REGIONAL WEST TOTAL	586277.	181102.	151091.
HAMILTON	530063.	69776.	97524.
HAMILTON TOTAL	530063.	69776.	97524.
SOUTH PICKERING-AJAX	85460.	12879.	20682.
NORTH PICKERING-AIRPORT	39614.	12205.	27198.
OSHAWA-WHITBY	265742.	21455.	28814.
BOWMANVILLE	19833.	4656.	4091.
AUDLEY-COLUMBUS	6182.	4291.	4484.
REGIONAL EAST TOTAL	416832.	55486.	85269.
OTHER RURAL & RESIDUAL AREAS	113028.	22419.	44272.
OTHER RURAL & RESIDUAL AREAS TOTAL	113028.	22419.	44272.
GRAND TOTAL	4429003.	637999.	1488000.

POLICY: TRANSPORTATION CASE 4B

	1986 EMPIRIC FORECAST		
	POPULATION	M/W	R/S/O
TORONTO CENTRAL	648874.	39568.	542038.
TORONTO NORTH	792596.	74073.	262846.
TORONTO WEST	565449.	131304.	78290.
TORONTO EAST	552514.	33258.	149675.
TORONTO TOTAL	2559427.	278203.	1032848.
NORTH FRINGE-RICHMOND HILL-WOODBRIDGE	118205.	21650.	34379.
MARKHAM-UNIONVILLE	42607.	6727.	21650.
AURORA-NEWMARKET	57869.	8246.	13813.
REGIONAL NORTH TOTAL	218681.	36623.	69842.
MALTON	26065.	70793.	27364.
MISSISSAUGA	214989.	17007.	44338.
ERIN MILLS	65839.	9825.	19991.
OAKVILLE	65604.	23484.	17383.
NORTH OAKVILLE-MILTON	15553.	7940.	7141.
BURLINGTON-NORTH BURLINGTON	101142.	18560.	16052.
BRAMPTON-BRAMALEA	100998.	31217.	24232.
REGIONAL WEST TOTAL	590190.	178825.	156500.
HAMILTON	531477.	64989.	100007.
HAMILTON TOTAL	531477.	64989.	100007.
SOUTH PICKERING-AJAX	85386.	13092.	20537.
NORTH PICKERING-AIRPORT	39547.	12425.	27066.
OSHAWA-WHITBY	265485.	21910.	28681.
BOWMANVILLE	19811.	4766.	4039.
AUDLEY-COLUMBUS	6167.	4379.	4440.
REGIONAL EAST TOTAL	416396.	56573.	84763.
OTHER RURAL & RESIDUAL AREAS	112840.	22787.	44054.
OTHER RURAL & RESIDUAL AREAS TOTAL	112840.	22787.	44054.
GRAND TOTAL	4428996.	637999.	1488001.

POLICY: TRANSPORTATION CASE 5

	1986 EMPIRIC FORECAST		
	POPULATION	M/W	R/S/O
TORONTO CENTRAL	651641.	37479.	546856.
TORONTO NORTH	794384.	73059.	264262.
TORONTO WEST	566162.	130686.	78661.
TORONTO EAST	553598.	31308.	151633.
TORONTO TOTAL	2565780.	272533.	1041412.
NORTH FRINGE-RICHMOND HILL-WOODBRIDGE	118448.	21367.	34576.
MARKHAM-UNIONVILLE	42721.	6584.	21823.
AURORA-NEWMARKET	58007.	8153.	13898.
REGIONAL NORTH TOTAL	219176.	36104.	70298.
MALTON	25358.	70048.	26465.
MISSISSAUGA	211647.	18975.	41148.
ERIN MILLS	64698.	10531.	19017.
OAKVILLE	65064.	24308.	16435.
NORTH OAKVILLE-MILTON	15462.	7950.	7036.
BURLINGTON-NORTH BURLINGTON	100717.	19185.	14981.
BRAMPTON-BRAMALEA	101147.	30873.	24380.
REGIONAL WEST TOTAL	584093.	181869.	149462.
HAMILTON	530168.	69726.	97388.
HAMILTON TOTAL	530168.	69726.	97388.
SOUTH PICKERING-AJAX	85515.	12863.	20697.
NORTH PICKERING-AIRPORT	39678.	12172.	27238.
OSHAWA-WHITBY	265554.	21388.	28634.
BOWMANVILLE	19798.	4647.	4074.
AUDLEY-COLUMBUS	6179.	4288.	4488.
REGIONAL EAST TOTAL	416724.	55358.	85131.
OTHER RURAL & RESIDUAL AREAS	113070.	22410.	44321.
OTHER RURAL & RESIDUAL AREAS TOTAL	113070.	22410.	44321.
GRAND TOTAL	4428999.	638000.	1487999.

POLICY: TRANSPORTATION CASE 6

	1986 EMPIRIC FORECAST		
	POPULATION	M/W	R/S/O
TORONTO CENTRAL	653068.	37046.	548182.
TORONTO NORTH	795318.	72843.	264662.
TORONTO WEST	566584.	130504.	78774.
TORONTO EAST	554384.	30980.	152076.
TORONTO TOTAL	2569350.	271373.	1043694.
NORTH FRINGE-RICHMOND HILL-WOODBRIDGE	118579.	21335.	34617.
MARKHAM-UNIONVILLE	42780.	6566.	21862.
AURORA-NEWMARKET	58070.	8140.	13914.
REGIONAL NORTH TOTAL	219428.	36041.	70393.
MALTON	25415.	69884.	26503.
MISSISSAUGA	211805.	18909.	41166.
ERIN MILLS	64707.	10493.	19054.
OAKVILLE	65054.	24266.	16407.
NORTH OAKVILLE-MILTON	13789.	8432.	6075.
BURLINGTON-NORTH BURLINGTON	99755.	19417.	14392.
BRAMPTON-BRAMALEA	101244.	30828.	24415.
REGIONAL WEST TOTAL	581770.	182229.	148011.
HAMILTON	530650.	69646.	97362.
HAMILTON TOTAL	530650.	69646.	97362.
SOUTH PICKERING-AJAX	85495.	12824.	20682.
NORTH PICKERING-AIRPORT	39075.	12712.	27021.
OSHAWA-WHITBY	265772.	21266.	28593.
BOWMANVILLE	19811.	4629.	4071.
AUDLEY-COLUMBUS	4484.	4907.	3807.
REGIONAL EAST TOTAL	414636.	56339.	84174.
OTHER RURAL & RESIDUAL AREAS	113179.	22372.	44379.
OTHER RURAL & RESIDUAL AREAS TOTAL	113179.	22372.	44379.
GRAND TOTAL	4429000.	637999.	1488001.

POLICY: TRANSPORTATION CASE 7

	1986 EMPIRIC FORECAST		
	POPULATION	M/W	R/S/O
TORONTO CENTRAL	633282.	43787.	527417.
TORONTO NORTH	798263.	75832.	263473.
TORONTO WEST	562126.	131996.	78369.
TORONTO EAST	558761.	30850.	156544.
TORONTO TOTAL	2552426.	282464.	1025803.
NORTH FRINGE-RICHMOND HILL-WOODBRIDGE	118048.	21876.	34462.
MARKHAM-UNIONVILLE	41982.	7091.	21249.
AURORA-NEWMARKET	57522.	8429.	13718.
REGIONAL NORTH TOTAL	217552.	37396.	69429.
MALTON	26777.	72088.	27089.
MISSISSAUGA	213165.	17235.	44284.
ERIN MILLS	65009.	10209.	19759.
OAKVILLE	65268.	23875.	17227.
NORTH OAKVILLE-MILTON	16241.	8419.	9179.
BURLINGTON-NORTH BURLINGTON	101338.	19012.	16330.
BRAMPTON-BRAMALEA	100522.	32059.	23783.
REGIONAL WEST TOTAL	588320.	182897.	157652.
HAMILTON	537004.	65753.	96847.
HAMILTON TOTAL	537004.	65753.	96847.
SOUTH PICKERING-AJAX	85778.	12009.	21652.
NORTH PICKERING-AIRPORT	41592.	10226.	28969.
OSHAWA-WHITBY	266652.	15410.	32265.
BOWMANVILLE	20414.	4048.	4913.
AUDLEY-COLUMBUS	6340.	4267.	4659.
REGIONAL EAST TOTAL	420775.	45960.	92457.
OTHER RURAL & RESIDUAL AREAS	112933.	23531.	45825.
OTHER RURAL & RESIDUAL AREAS TOTAL	112933.	23531.	45825.
GRAND TOTAL	4429000.	638000.	1487999.

POLICY: TRANSPORTATION CASE 8

	1986 EMPIRIC FORECAST		
	Population	M/W	R/S/O
TORONTO CENTRAL	670016.	0.	586526.
TORONTO NORTH	793475.	78730.	259014.
TORONTO WEST	557862.	140543.	71080.
TORONTO EAST	549695.	38097.	140250.
TORONTO TOTAL	2571043.	257370.	1056869.
NORTH FRINGE-RICHMOND HILL-WOODBRIDGE	116652.	22041.	32298.
MARKHAM-UNIONVILLE	40882.	7267.	19371.
AURORA-NEWMARKET	56867.	8490.	12462.
REGIONAL NORTH TOTAL	214400.	37798.	64130.
MALTON	25898.	74601.	25188.
MISSISSAUGA	211820.	18559.	41136.
ERIN MILLS	64066.	10827.	18443.
OAKVILLE	64407.	24989.	15454.
NORTH OAKVILLE-MILTON	14891.	8212.	6063.
BURLINGTON-NORTH BURLINGTON	100690.	18828.	15203.
BRAMPTON-BRAMALEA	100433.	33400.	23393.
REGIONAL WEST TOTAL	582204.	189416.	144881.
HAMILTON	538243.	72372.	97098.
HAMILTON TOTAL	538243.	72372.	97098.
SOUTH PICKERING-AJAX	84100.	12716.	19704.
NORTH PICKERING-AIRPORT	40848.	10151.	28047.
OSHAWA-WHITBY	261398.	26757.	26972.
BOWMANVILLE	19910.	4126.	4555.
AUDLEY-COLUMBUS	5882.	4286.	4263.
REGIONAL EAST TOTAL	412138.	58036.	83541.
OTHER RURAL & RESIDUAL AREAS	110984.	23007.	41495.
OTHER RURAL & RESIDUAL AREAS TOTAL	110984.	23007.	41495.
GRAND TOTAL	4428999.	638000.	1488003.

POLICY: TRANSPORTATION CASE 9

	1986 EMPIRIC FORECAST		
	POPULATION	M/W	R/S/O
TORONTO CENTRAL	735531.	33461.	638616.
TORONTO NORTH	796913.	78001.	257615.
TORONTO WEST	555422.	131919.	65262.
TORONTO EAST	557595.	33751.	142306.
TORONTO TOTAL	2645455.	277132.	1103797.
NORTH FRINGE-RICHMOND HILL-WOODBRIDGE	102464.	23008.	26997.
MARKHAM-UNIONVILLE	32493.	7733.	17178.
AURORA-NEWMARKET	50165.	9380.	8477.
REGIONAL NORTH TOTAL	185122.	40120.	52652.
MALTON	15846.	57375.	23647.
MISSISSAUGA	213955.	18531.	38248.
ERIN MILLS	56594.	11678.	15599.
OAKVILLE	60253.	24574.	13396.
NORTH OAKVILLE-MILTON	9191.	8961.	7001.
BURLINGTON-NORTH BURLINGTON	94664.	19934.	11096.
BRAMPTON-BRAMALEA	99186.	30662.	23395.
REGIONAL WEST TOTAL	549690.	171715.	132381.
HAMILTON	552773.	69479.	90979.
HAMILTON TOTAL	552773.	69479.	90979.
SOUTH PICKERING-AJAX	81811.	12911.	17081.
NORTH PICKERING-AIRPORT	38073.	11091.	25154.
OSHAWA-WHITBY	269314.	19875.	23720.
BOWMANVILLE	17932.	4445.	3627.
AUDLEY-COLUMBUS	971.	4672.	3006.
REGIONAL EAST TOTAL	408102.	52995.	72588.
OTHER RURAL & RESIDUAL AREAS	87869.	26559.	35614.
OTHER RURAL & RESIDUAL AREAS TOTAL	87869.	26559.	35614.
GRAND TOTAL	4429001.	638000.	1487997.

POLICY: TRANSPORTATION CASE 8
WITH OSHAWA-WHITBY PIPE

	1986 EMPIRIC FORECAST		
	Population	M/W	R/S/O
TORONTO CENTRAL	623976.	0.	585443.
TORONTO NORTH	745973.	78648.	258304.
TORONTO WEST	516988.	140904.	70319.
TORONTO EAST	503177.	38080.	140436.
TORONTO TOTAL	2390110.	257632.	1054502.
NORTH FRINGE-RICHMOND HILL-WOODBRIDGE	105844.	21887.	32197.
MARKHAM-UNIONVILLE	37335.	7269.	19401.
AURORA-NEWMARKET	51041.	8377.	12434.
REGIONAL NORTH TOTAL	194220.	37533.	64032.
MALTON	23937.	74617.	25071.
MISSISSAUGA	190767.	18101.	41008.
ERIN MILLS	57816.	10714.	18393.
OAKVILLE	56670.	24842.	15362.
NORTH OAKVILLE-MILTON	13297.	8199.	6029.
BURLINGTON-NORTH BURLINGTON	90645.	18627.	15099.
BRAMPTON-BRAMALEA	92909.	33311.	23301.
REGIONAL WEST TOTAL	526040.	188410.	144264.
HAMILTON	496332.	72688.	96450.
HAMILTON TOTAL	496332.	72688.	96450.
SOUTH PICKERING-AJAX	152481.	12331.	21753.
NORTH PICKERING-AIRPORT	127953.	9027.	29509.
OSHAWA-WHITBY	296928.	26517.	27368.
BOWMANVILLE	17345.	4093.	4613.
AUDLEY-COLUMBUS	125548.	6906.	4123.
REGIONAL EAST TOTAL	720254.	58874.	87365.
OTHER RURAL & RESIDUAL AREAS	102052.	22863.	41402.
OTHER RURAL & RESIDUAL AREAS TOTAL	102052.	22863.	41402.
GRAND TOTAL	4428992.	638000.	1488000.

POLICY: BASE CASE 2001

	2001 EMPIRIC FORECAST		
	POPULATION	M/W	R/S/O
TORONTO CENTRAL	734107.	0.	688231.
TORONTO NORTH	858529.	92263.	317913.
TORONTO WEST	620270.	129666.	78415.
TORONTO EAST	633361.	53908.	206599.
TORONTO TOTAL	2846262.	275837.	1291155.
NORTH FRINGE-RICHMOND HILL-WOODBRIDGE	167550.	34879.	47500.
MARKHAM-UNIONVILLE	54290.	15506.	32947.
AURORA-NEWMARKET	79312.	12537.	21174.
REGIONAL NORTH TOTAL	301152.	62922.	101621.
MALTON	39918.	73371.	36466.
MISSISSAUGA	305832.	11752.	62860.
ERIN MILLS	156358.	15270.	29813.
OAKVILLE	80836.	31690.	18149.
NORTH OAKVILLE-MILTON	45340.	15196.	7642.
BURLINGTON-NORTH BURLINGTON	127174.	23470.	17053.
BRAMPTON-BRAMALEA	149274.	45061.	22981.
REGIONAL WEST TOTAL	904731.	215809.	194964.
HAMILTON	750184.	41451.	118436.
HAMILTON TOTAL	750184.	41451.	118436.
SOUTH PICKERING-AJAX	131879.	15682.	36467.
NORTH PICKERING-AIRPORT	115373.	49001.	88827.
OSHAWA-WHITBY	387036.	15653.	53831.
BOWMANVILLE	23872.	5491.	8226.
AUDLEY-COLUMBUS	53458.	8433.	11474.
REGIONAL EAST TOTAL	711618.	94261.	198826.
OTHER RURAL & RESIDUAL AREAS	133068.	46720.	66010.
OTHER RURAL & RESIDUAL AREAS TOTAL	133068.	46720.	66010.
GRAND TOTAL	5647001.	737000.	1970999.

REVISED BASE 2001

	2001 EMPIRIC FORECAST		
	Population	M/W	R/S/O
TORONTO CENTRAL	759833.	0.	702835.
TORONTO NORTH	870412.	89851.	320718.
TORONTO WEST	629462.	129760.	77194.
TORONTO EAST	648412.	49145.	209487.
TORONTO TOTAL	2908112.	268756.	1310231.
NORTH FRINGE-RICHMOND HILL-WOODBRIDGE	170168.	33580.	47911.
MARKHAM-UNIONVILLE	54930.	14334.	33133.
AURORA-NEWMARKET	73724.	13388.	18730.
REGIONAL NORTH TOTAL	298823.	61302.	99774.
MALTON	38892.	73371.	33647.
MISSISSAUGA	299341.	25316.	56204.
ERIN MILLS	151890.	16635.	29230.
OAKVILLE	75183.	32909.	17423.
NORTH OAKVILLE-MILTON	45295.	14621.	7709.
BURLINGTON-NORTH BURLINGTON	120992.	23366.	17361.
BRAMPTON-BRAMALEA	140450.	43114.	18963.
REGIONAL WEST TOTAL	872043.	229332.	180537.
HAMILTON	744454.	41001.	117901.
HAMILTON TOTAL	744454.	41001.	117901.
SOUTH PICKERING-AJAX	129744.	14598.	35696.
NORTH PICKERING-AIRPORT	104577.	48800.	87316.
OSHAWA-WHITBY	378040.	15653.	52366.
BOWMANVILLE	22804.	5241.	8431.
AUDLEY-COLUMBUS	52987.	7908.	11662.
REGIONAL EAST TOTAL	688152.	92200.	195472.
OTHER RURAL & RESIDUAL AREAS	135428.	44409.	67101.
OTHER RURAL & RESIDUAL AREAS TOTAL	135428.	44409.	67101.
GRAND TOTAL	5646997.	736999.	1971000.

REVISED SUPER SYSTEM 2001

	2001 EMPIRIC FORECAST		
	Population	M/W	R/S/O
TORONTO CENTRAL	823552.	0.	745414.
TORONTO NORTH	869758.	80346.	327366.
TORONTO WEST	643277.	128311.	75548.
TORONTO EAST	627261.	53037.	200114.
TORONTO TOTAL	2963839.	261695.	1348439.
NORTH FRINGE-RICHMOND HILL-WOODBRIDGE	172895.	32364.	48959.
MARKHAM-UNIONVILLE	58387.	13955.	35160.
AURORA-NEWMARKET	75299.	12645.	19455.
REGIONAL NORTH TOTAL	306581.	58965.	103573.
MALTON	28946.	68035.	36098.
MISSISSAUGA	289487.	26166.	47498.
ERIN MILLS	152327.	16292.	28634.
OAKVILLE	78229.	32726.	16566.
NORTH OAKVILLE-MILTON	38776.	15018.	6288.
BURLINGTON-NORTH BURLINGTON	119078.	24320.	13547.
BRAMPTON-BRAMALEA	140649.	41203.	21019.
REGIONAL WEST TOTAL	847492.	223760.	169648.
HAMILTON	718557.	43956.	107758.
HAMILTON TOTAL	718557.	43956.	107758.
SOUTH PICKERING-AJAX	131353.	16407.	34307.
NORTH PICKERING-AIRPORT	94276.	57613.	78640.
OSHAWA-WHITBY	377931.	15653.	42392.
BOWMANVILLE	20884.	6470.	6485.
AUDLEY-COLUMBUS	45155.	9470.	9917.
REGIONAL EAST TOTAL	669599.	105613.	171741.
OTHER RURAL & RESIDUAL AREAS	140943.	43011.	69852.
OTHER RURAL & RESIDUAL AREAS TOTAL	140943.	43011.	69852.
GRAND TOTAL	5646999.	737000.	1970996.

ROAD CONGESTION 2001

	2001 EMPIRIC FORECAST		
	Population	M/W	R/S/O
TORONTO CENTRAL	897236.	610.	920264.
TORONTO NORTH	816253.	93393.	283257.
TORONTO WEST	599630.	139322.	32137.
TORONTO EAST	592368.	52354.	145432.
TORONTO TOTAL	2905479.	285678.	1381084.
NORTH FRINGE-RICHMOND HILL-WOODBRIDGE	162941.	30613.	40920.
MARKHAM-UNIONVILLE	51854.	13429.	30310.
AURORA-NEWMARKET	77379.	11153.	17671.
REGIONAL NORTH TOTAL	292175.	55195.	88901.
MALTON	35923.	76019.	29727.
MISSISSAUGA	301779.	16930.	51392.
ERIN MILLS	152417.	14601.	24406.
OAKVILLE	77652.	31890.	9547.
NORTH OAKVILLE-MILTON	41920.	12015.	1106.
BURLINGTON-NORTH BURLINGTON	125891.	21051.	13636.
BRAMPTON-BRAMALEA	148049.	44622.	18361.
REGIONAL WEST TOTAL	883632.	217128.	148175.
HAMILTON	756343.	45142.	114566.
HAMILTON TOTAL	756343.	45142.	114566.
SOUTH PICKERING-AJAX	127442.	15781.	33226.
NORTH PICKERING-AIRPORT	118921.	51691.	89036.
OSHAWA-WHITBY	359345.	15653.	39616.
BOWMANVILLE	21655.	5420.	6878.
AUDLEY-COLUMBUS	51676.	7320.	11290.
REGIONAL EAST TOTAL	679038.	95865.	180045.
OTHER RURAL & RESIDUAL AREAS	130344.	37991.	58240.
OTHER RURAL & RESIDUAL AREAS TOTAL	130344.	37991.	58240.
GRAND TOTAL	5646997.	736999.	1970997.

ROAD CONGESTION

OSHAWA-WHITBY PIPE 2001

	2001 EMPIRIC FORECAST		
	Population	M/W	R/S/O
TORONTO CENTRAL	856853.	908.	906903.
TORONTO NORTH	779362.	101634.	269552.
TORONTO WEST	563686.	141714.	25033.
TORONTO EAST	552196.	56034.	137650.
TORONTO TOTAL	2752090.	300289.	1339133.
NORTH FRINGE-RICHMOND HILL-WOODBRIDGE	152573.	33250.	38288.
MARKHAM-UNIONVILLE	48215.	14643.	29534.
AURORA-NEWMARKET	72439.	12086.	16555.
REGIONAL NORTH TOTAL	273227.	59979.	84377.
MALTON	33891.	76051.	29241.
MISSISSAUGA	282045.	21371.	47299.
ERIN MILLS	142694.	16559.	22355.
OAKVILLE	71827.	33682.	6933.
NORTH OAKVILLE-MILTON	39172.	13070.	53.
BURLINGTON-NORTH BURLINGTON	117881.	23488.	10979.
BRAMPTON-BRAMALEA	139533.	47648.	14787.
REGIONAL WEST TOTAL	827044.	231869.	131646.
HAMILTON	709622.	68839.	100548.
HAMILTON TOTAL	709622.	68839.	100548.
SOUTH PICKERING-AJAX	198322.	0.	50550.
NORTH PICKERING-AIRPORT	191097.	13586.	117427.
OSHAWA-WHITBY	371305.	15653.	48333.
BOWMANVILLE	18874.	5808.	6720.
AUDLEY-COLUMBUS	181449.	0.	36946.
REGIONAL EAST TOTAL	961048.	35047.	259975.
OTHER RURAL & RESIDUAL AREAS	123979.	40976.	55335.
OTHER RURAL & RESIDUAL AREAS TOTAL	123979.	40976.	55335.
GRAND TOTAL	5646999.	736999.	1971000.

APPENDIX A

Detailed Definition of the 1986 Base Case

(c) It was assumed that residential acres would be made available two years in advance of their being required for residential use. This implies that it takes two years from the time land is made available to the time people actually occupy it. Thus, for example, the 1981 residential acres input corresponds to the 1983 need.

(d) The residential acreage obtained in that way was checked against the total land available to ensure compatibility between planned development and land availability.

(e) For Metro Toronto, most of the central area is already filled up and growth has been allocated to those areas with available land up to capacity in accordance with preferred population growth and current high densities.

(f) The following are the ultimate densities as supplied by the Task Force:

Class I Centres	95 ppgra
Class II Centres	68 ppgra
Class III Centres	55 ppgra
Class IV Centres	50 ppgra
Class V Centres	35 ppgra
Class VI Centres	27 ppgra

(g) Classes I to VI correspond to the various functional roles assigned to the urban places by the COLUC Task Force. The classes of these urban places are as follows:

Class I:	Metropolitan Toronto including North Metro Fringe
Class II:	Hamilton, Oshawa-Whitby, Mississauga
Class III:	Oakville, Aurora/Newmarket, North Pickering
Class IV:	Burlington, Erin Mills/Meadowvale, North Oakville, Brampton/Bramalea, South Pickering, Ajax, Columbus
Class V:	North Burlington, Richmond Hill, Audley
Class VI:	Milton, Malton, Georgetown, Woodbridge, Markham, Bowmanville

SERVICING INFRASTRUCTURE

Water and sewer capacities were derived from the population preferences by applying a uniform consumption rate of 200 gallons per capita per day for all urban places.

AIRPORT DEVELOPMENT

Pickering Airport is assumed to be operational with a partial international role in 1981 and a full international role in 1986.

TRANSPORTATION POLICIES

The two maps, overleaf, (Exhibits A1 and A2) show the Road and Transit Base Networks implemented in phases between now and 1986.

EXHIBIT AI

NEW ROAD FACILITIES: 1974-86

EXHIBIT A2

NEW TRANSIT FACILITIES (BASE SYSTEM) 1969-86

The year in which the facility came or is expected to come into operation is shown in brackets.

APPENDIX B

Detailed Definition of the 1986 Cases Other than the Base Case and the Transportation Cases

CASES DERIVED FROM THE BASE CASE

No New Airport

All policy assumptions are identical to those made in the Base Case except that no new airport is assumed at Pickering and all airport activity is maintained at Malton.

Mature State Densities with Airport

Indentical in all respects to the Base Case except for the residential acreage. This acreage is computed in the same way as for the Base Case, but assuming all new growth to take place at mature state densities starting in 1971. These densities are as follows:

Class of Centre	Gross Residential Density
Class I	95 ppgra
Class II	68 ppgra
Class III	55 ppgra
Class IV	50 ppgra
Class V	35 ppgra
Class VI	27 ppgra

Mature State Density without New Airport

Identical to the previous case, but with no airport at Pickering.

C.B.D. Restricted

Identical to the Base Case except for the following:

- R.S.O. Employment Growth in downtown Toronto is restricted to 75 per cent of the base case growth over 1975-81 and 25 per cent of the base case growth over 1981-86

- M and W Employment Growth in the Malton Urban Place is restricted to 25 per cent of the base case growth over 1981-86

- 5,000 R.S.O. jobs are added to Oshawa in 1981 and another 5,000 in 1986.

TREND CASES

The policies were developed from an analysis of existing policies and trends prior to the establishment of the COLUC Task Force. There are significant differences with the base case with respect to the residential acreage and the servicing infrastructure as the hierarchy of centres had not been established and therefore the densities used were more related to past trends than to future roles. The transportation policies are essentially the same as for the base case. The regional control totals also differ as they were derived by interpolation from the 1971 actual levels and the year 2000 T.C.R. target figures.

The two trend cases differ in that one assumes an Airport at Pickering and the other does not.

SERVICING CASES

All cases are identical to the Base Case except for the residential acreage and servicing capacities allocated to certain urban places, as follows:

York Pipe:

Under the York Pipe Policy, the servicing capacities provided for 1986 were for the following populations:

Ajax/South Pickering	200,000
North Pickering	200,000
Markham/Unionville	90,000
Richmond Hill/Woodbridge/ North Metro Fringe	269,000
Aurora/Newmarket	83,000

These are roughly equivalent to the Mature-State levels.

Acres were provided in accordance with the above capacities, i.e. Mature State acres by 1986 and Base Case 2001 in 1981.

Oshawa-Whitby Pipe:

Under the Oshawa-Whitby Pipe policy, water and sewer capacities were calculated for design population of:

Ajax/South Pickering	240,000
North Pickering	200,000
Oshawa/Whitby	450,000
Audley/Columbus	220,000

These are roughly equivalent to the Mature State population levels.

For 1986, the acres provided were roughly equivalent to those required at Mature State and for 1981 to those required to the year 2001 in the Base Case.

Peel Pipe:

Under the Peel Pipe policy, it was assumed that enough capacity would be provided to service the following populations in 1986:

Malton	35,000
Brampton/Bramalea	275,000
Mississauga	440,000
Erin Mills/Meadowvale	270,000

These are roughly the Mature-State levels for these envelopes.

Residential Acres were provided in accordance with the above capacities. This corresponds roughly to Mature-State acreage by 1986 and the equivalent of the 2001 Acreage under the Base Case for 1981.

All Pipes:

Under the "All Pipes" policy, the servicing capacities and residential acres assumed under the "York Pipe", "Peel Pipe" and "Oshawa-Whitby Pipe" policies were all provided at the same time in the relevant urban places.

APPENDIX C

Detailed Definition of the 1986 Transportation Cases

All 1986 Transportation Cases are identical to the 1986 Base Case except for the following differences:

Transportation Case 1 (T.C.1): Add GO Service to Oshawa (see Exhibit C1, overleaf).

Transportation Case 2 (T.C.2): T.C.1 plus Airport Feeder Service (see Exhibit C2, overleaf).

Transportation Case 3 (T.C.3): T.C.2 plus Toronto CBD Malton-Pickering High Speed Service (see Exhibit C3, overleaf).

Transportation Case 4A (T.C.4A): T.C.3 plus Lakeshore High Speed Service (see Exhibit C4A, overleaf).

Transportation Case 4B (T.C.4B): T.C.3 plus Lakeshore High Speed Service to Oshawa (see Exhibit C4B, overleaf).

Transportation Case 5 (T.C.5): T.C.4A plus Second Tier High Speed Service (see Exhibit C5, overleaf).

Transportation Case 6 (T.C.6): T.C.5 plus Second Tier Feeder Service (see Exhibit C6, overleaf). The total system assumed under T.C.6 is shown as the Super System on Exhibit C6S, overleaf.

Transportation Case 7 (T.C.7): Base Case plus Scarborough Expressway (see Exhibit C7, overleaf). Note that this is the only transportation case showing a road addition to the Base System.

Transportation Case 8 (T.C.8): T.C.4B with added congestion on the road system represented by an increase in interzonal travel times of 10% every five years starting in 1981. In addition, the access time to rapid transit in Oshawa-Whitby has been equated with the intrazonal vehicle time, thereby reflecting better intrazonal transit service.

Transportation Case 9 (T.C.9): This is a variation on the Base Case in which access times to rapid transit have been equated with vehicle times throughout the region, thereby reflecting improved local transit everywhere.

Transportation Case 8 with Oshawa-Whitby Pipe:
This case combines the Transportation Case 8 with the Oshawa-Whitby Pipe assumptions.

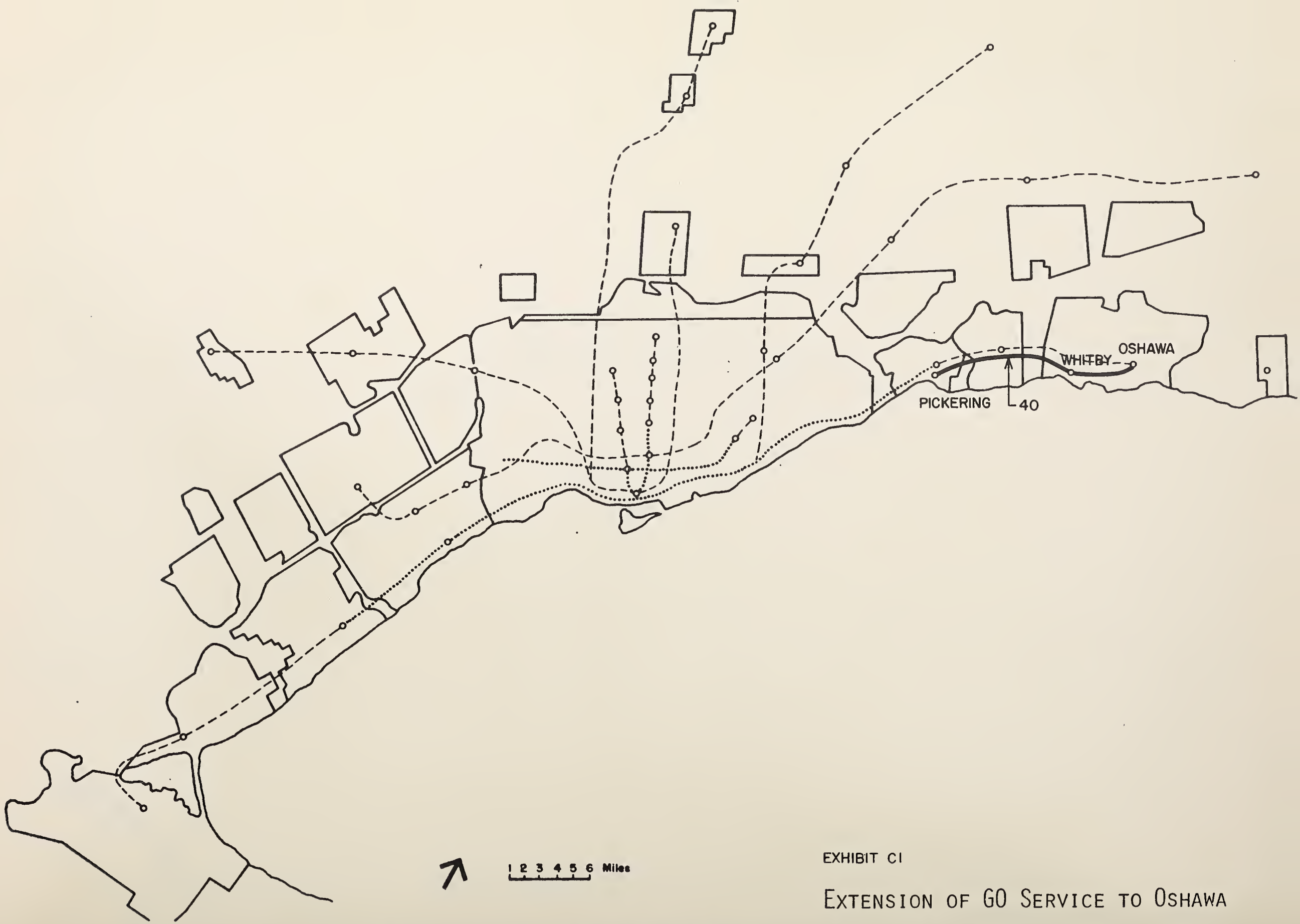


EXHIBIT C1

EXTENSION OF GO SERVICE TO OSHAWA

30: AVERAGE SPEEDS SHOWN ON LINKS IN M.P.H.
(INCLUDES STATION STOPS)

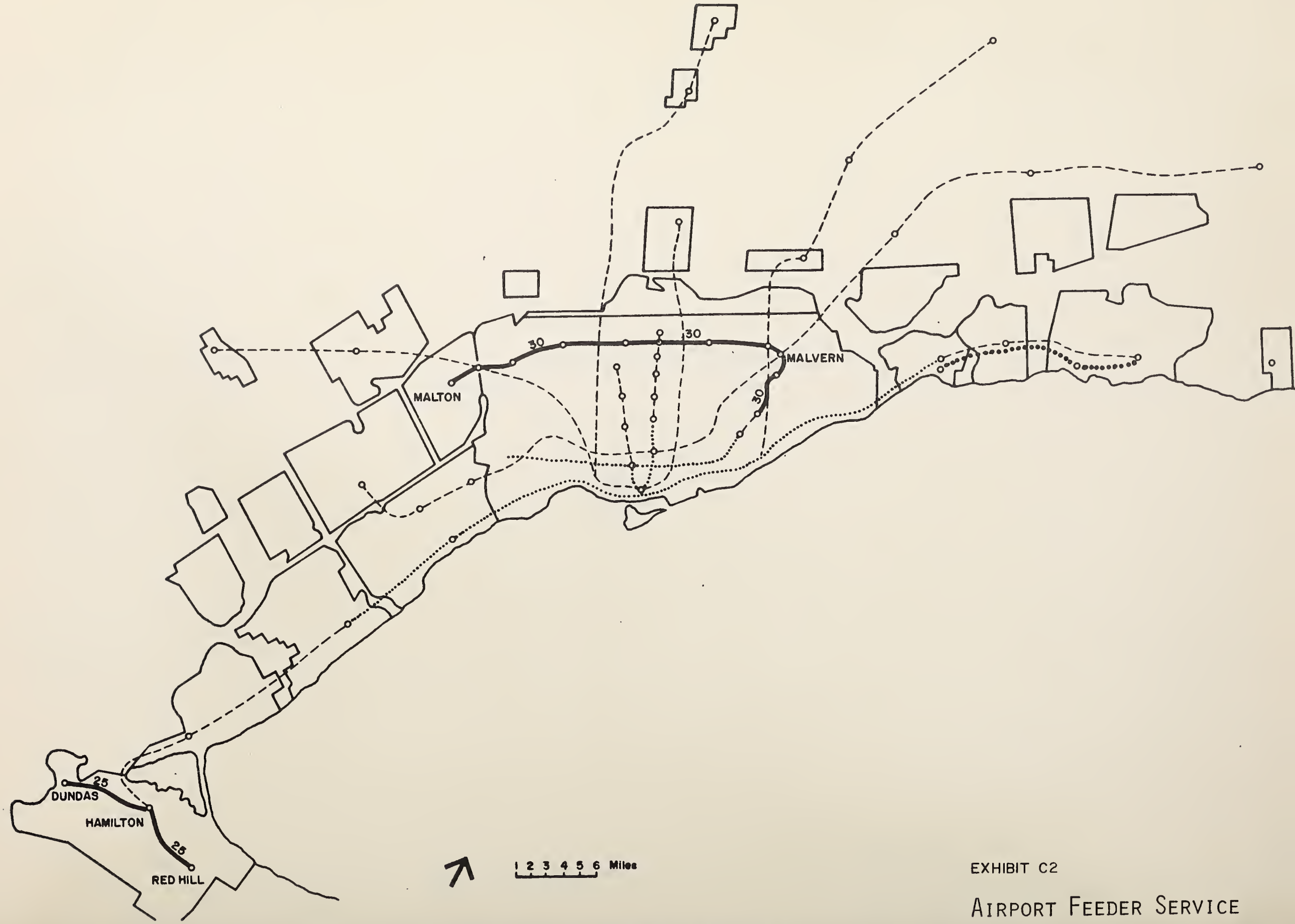
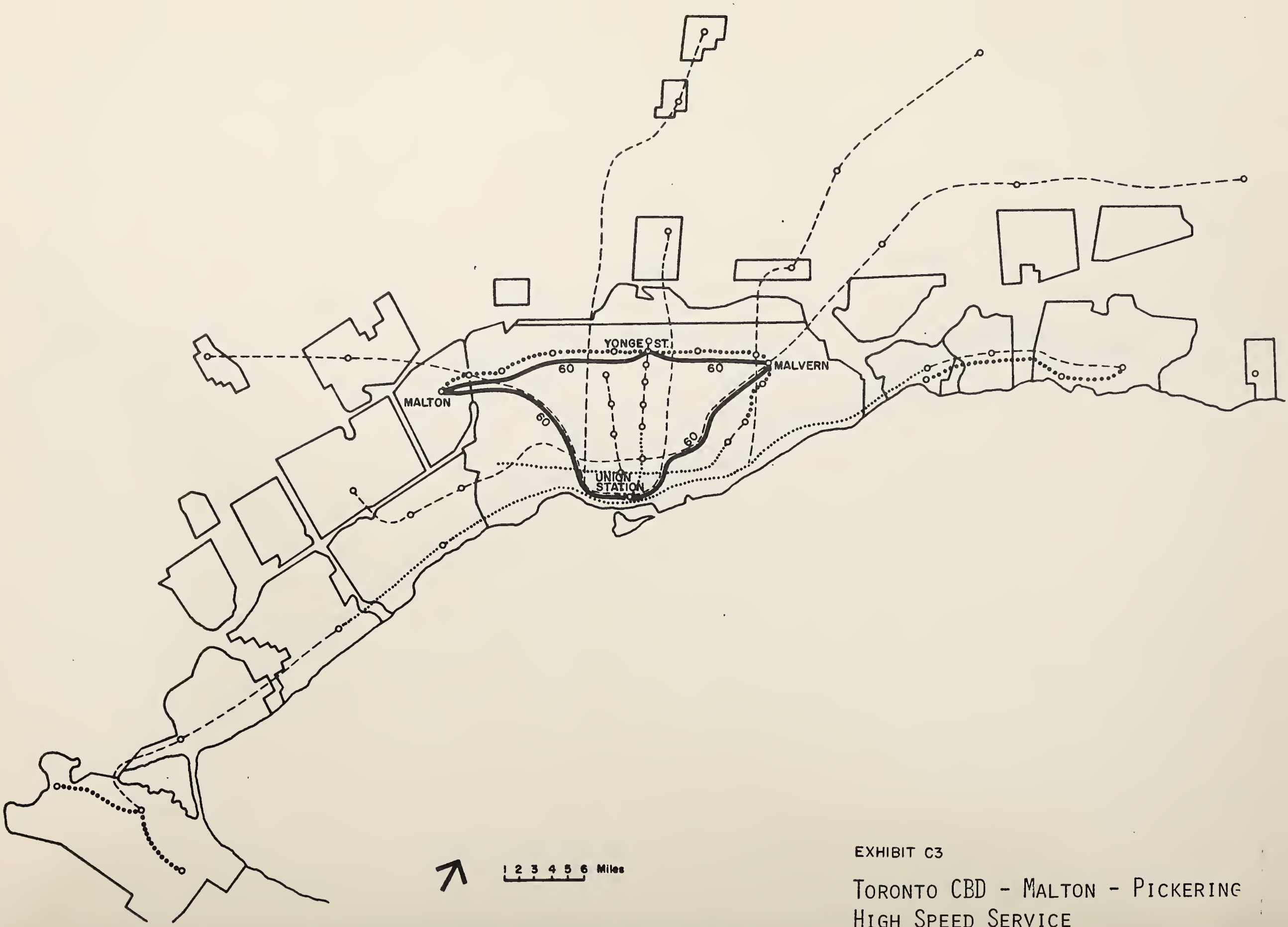


EXHIBIT C2

AIRPORT FEEDER SERVICE

30: AVERAGE SPEEDS SHOWN ON LINKS IN M.P.H.
(INCLUDES STATION STOPS)



30 : AVERAGE SPEEDS SHOWN ON LINKS IN M.P.H.
(INCLUDES STATION STOPS)

EXHIBIT C3

TORONTO CBD - MALTON - PICKERING
HIGH SPEED SERVICE

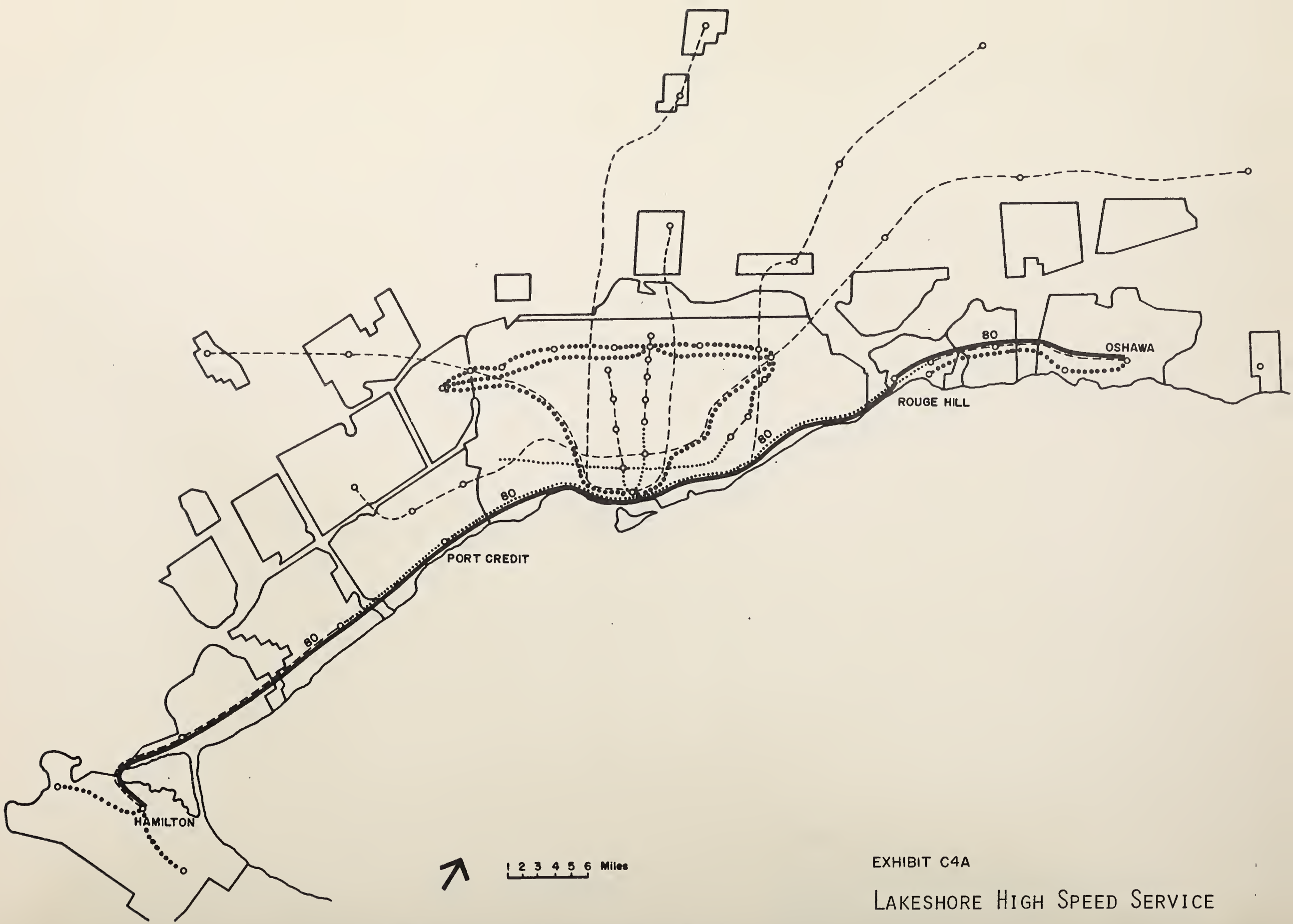
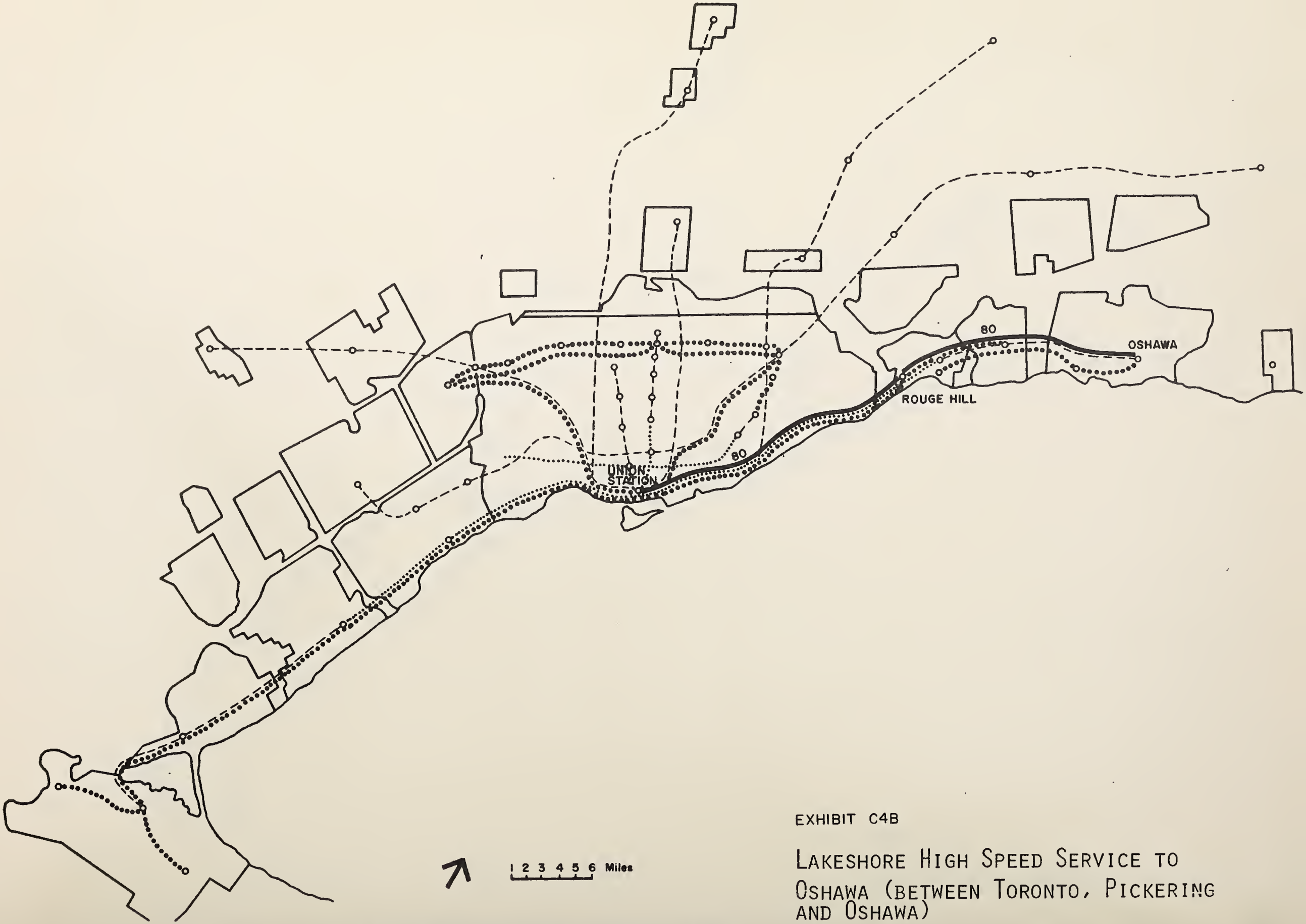


EXHIBIT C4A

LAKESHORE HIGH SPEED SERVICE

30 : AVERAGE SPEEDS SHOWN ON LINKS IN M.P.H.
(INCLUDES STATION STOPS)



30 AVERAGE SPEEDS SHOWN ON LINKS IN M.P.H.
(INCLUDES STATION STOPS)

EXHIBIT C4B

LAKESHORE HIGH SPEED SERVICE TO OSHAWA (BETWEEN TORONTO, PICKERING AND OSHAWA)

30 : AVERAGE SPEEDS SHOWN ON LINKS IN M.P.H.
(INCLUDES STATION STOPS)

EXHIBIT C5

SECOND TIER HIGH SPEED SERVICE

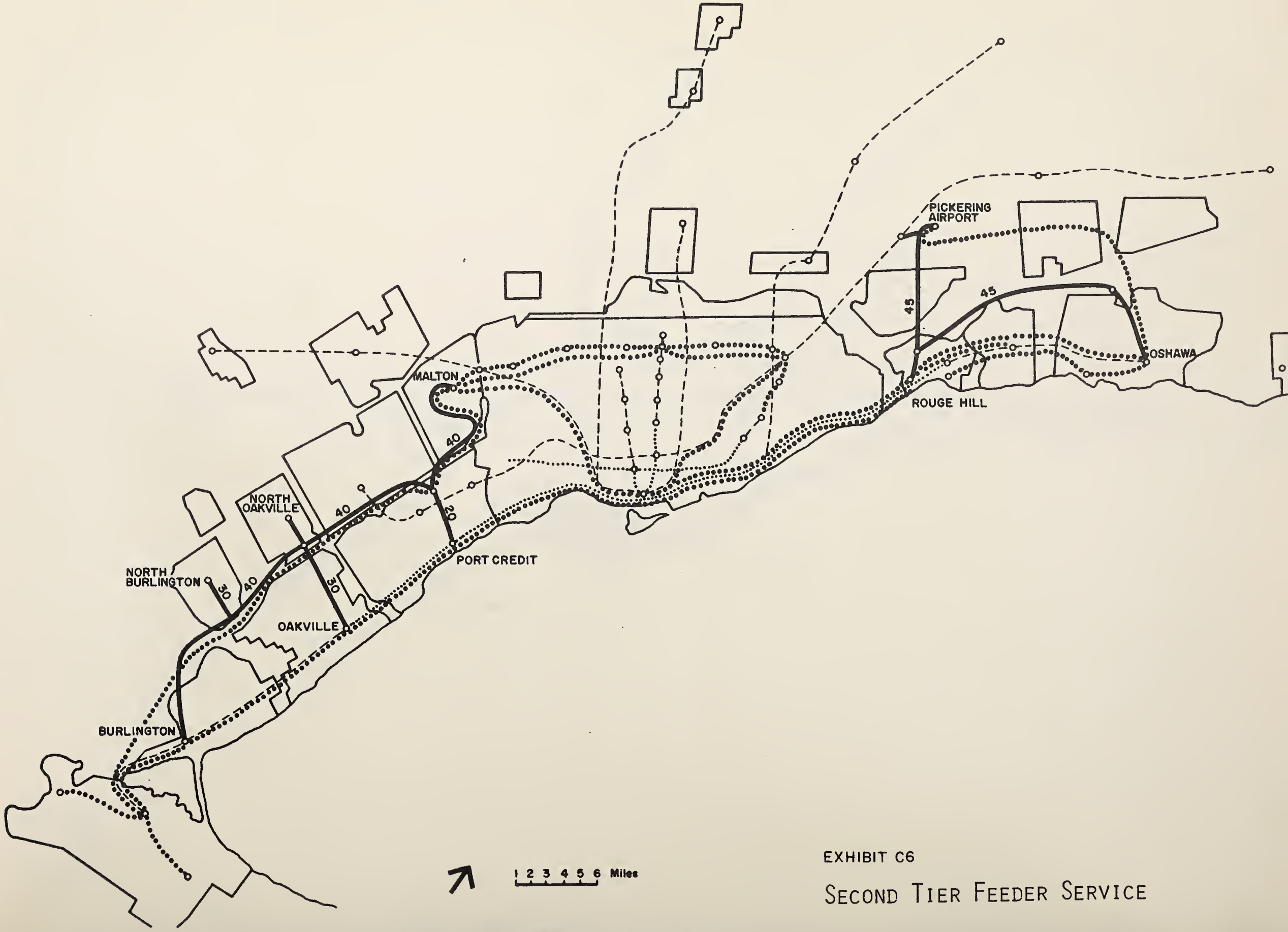


EXHIBIT C6

SECOND TIER FEEDER SERVICE

30 : AVERAGE SPEEDS SHOWN ON LINKS IN M.P.H.
(INCLUDES STATION STOPS)

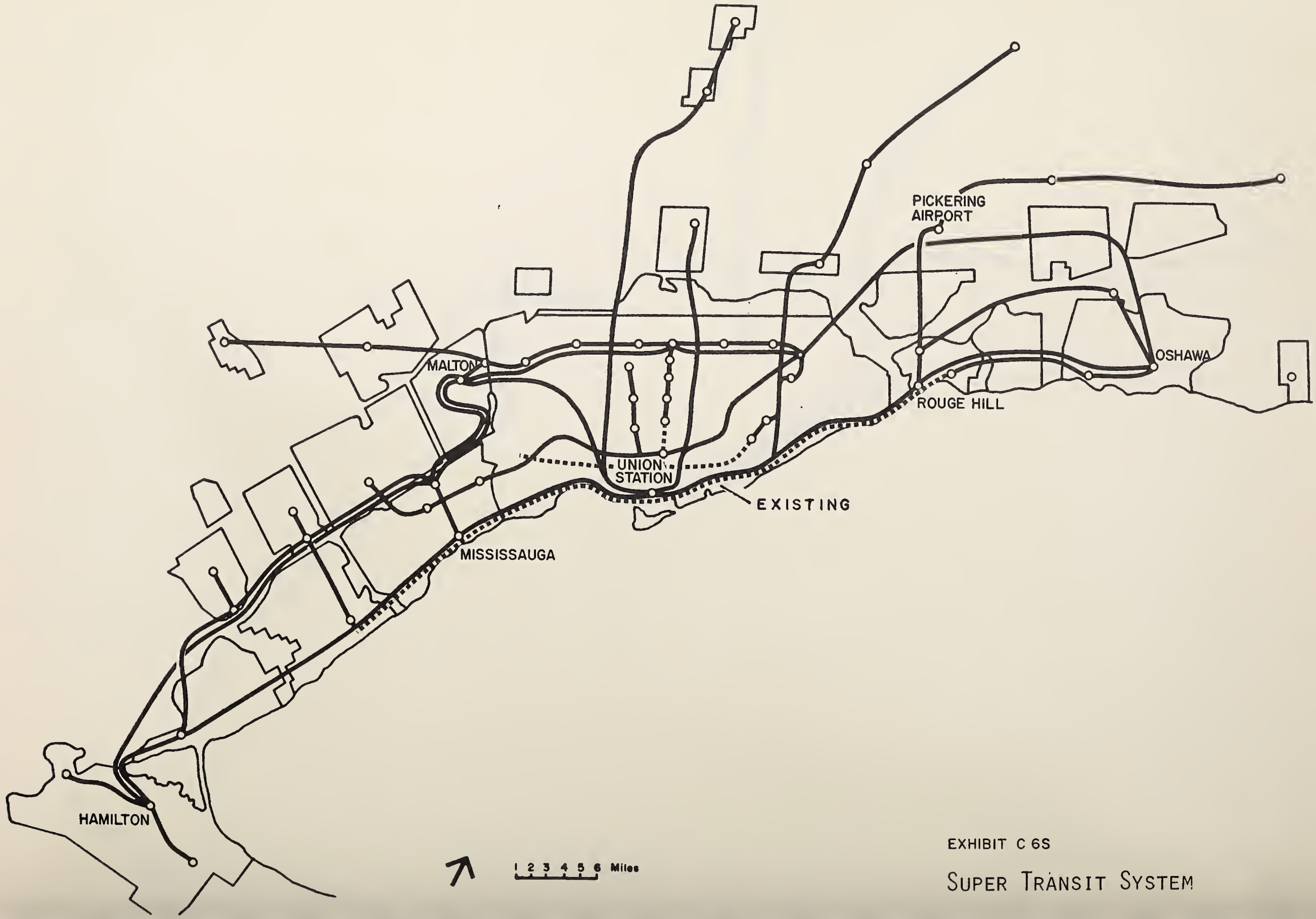


EXHIBIT C 6S

SUPER TRANSIT SYSTEM

EXHIBIT C7

SCARBOROUGH EXPRESSWAY

APPENDIX D

Year 2000 Cases

The year 2001 cases are defined below.

Base Case 2001

The policy inputs are derived in a manner identical to that used for the 1986 Base Case. Thus residential acres are calculated on the basis of the interpolated populations for 1991, 1996 and 2001 using increasing densities over time, and water and sewer capacities derived using a 200 gallon per capita per day consumption level. The transportation system is assumed identical as the 1986 base system with respect to both facilities and speed. This means that the only improvement assumed between 1986 and 2001 are those required to maintain existing levels of service on existing facilities with increased volumes. This would essentially mean additional lanes on roads and higher frequencies and additional capacity on transit.

Revised Base 2001

This case is identical to the Base Case 2001 except for the fact that access times to rapid transit are decreased to match vehicle times in eight selected locations (Hamilton, Mississauga, Oshawa-Whitby, North Pickering, Newmarket, Brampton-Bramalea, Finch-Bathurst and Downtown Toronto). This is equivalent to assuming improved local transit service in those areas.

Revised Super System 2001

The assumptions of the Revised Base Case 2001 are assumed to hold with the regional transit system consisting of the super system presented in Exhibit C6S. This system is assumed to operate from 1986 onwards.

Road Congestion 2001

Road congestion is added to the previous case, Revised Super System 2001. This increased congestion is represented by a 10% increase in interzonal travel times every five years, starting in 1981.

Road Congestion - Oshawa Whitby 2001

To the previous case is added the Oshawa-Whitby pipe assumption as defined in Appendix B.

HT/395/.C32/.COLUC53/1974
Ontario. Ministry of Treasury,
Policy tests using empiric
growth allocation model 1986 &
fzqt
mai

c.1